INTRODUCTION

La campagne internationale de sauvegarde de Carthage, se déroulait encore lorsque l’on apprit que la "Carthage du siècle de Bourguiba, à l’image de celle d’Auguste, allait bientôt se doter d’un réseau des eaux usées ".

Le ministre concerné par le projet ainsi que des conseillers municipaux de la commune présideraient donc une cérémonie lançant les travaux à proximité immédiate du port antique.

Pour la réalisation du projet, un prêt international avait été accordé, ce qui permit à la vaste chaîne des intérêts d’être satisfaite: appel d’offres internationaux pour l’achat des engins, appels à des bureaux d’études pour le tracé et les stations, adjudication pour les entreprises des travaux publics, achats d’équipements et de fournitures, vendeurs, acheteurs, ingénieurs, entrepreneurs, financiers, presque tout le monde trouva sa place ou son compte, tous à l’exception de l’archéologie qui fut laissée pour compte; or l’enjeu la concernait au premier chef et le jeu se déroulait sur son terrain, dans son sous-sol. Complicité ou négligence, personne n’évoqua ni ses servitudes ni ses contraintes.

Ainsi après une acalmie que l’on croyait stabilisée par la chape de béton et de macadam de l’urbanisation moderne, le sol et sous-sol de l’ancienne métropole allaient encore une fois être un chantier: une profonde entaille parcourant le réseau de voirie s’ouvrit pour la pose de canalisations destinées à collecter les eaux usées des habitations riveraines.

Voilà donc une certaine forme de progrès amenant un supplément de confort aux résidents d’une banlieue moderne mais faisant peu de cas d’un sous-sol qui, lui, n’était qu’une routine.

Sans vouloir porter de jugement sur ce projet qui peut paraître contestable, dangereux, superflu et hors d’échelle dans le cas présent, le peu de cas que l’on fit à ce sous-sol fut préjudiciable au patrimoine et à la science. Car les travaux se firent avec brutalité et rapidité, dans l’ignorance de ce que ce sous-sol représentait.

Un organisme international comme la Banque Mondiale dont la vocation est de venir en aide au tiers-monde pour des projets sociaux et économiques, eut à coeur de collaborer à l’accroissement du confort d’une banlieue déjà privilégiée. Elle apporta sa manne pour ce réseau d’égouts. Mais n’eut qu’un d’œil pour le site sur lequel allait s’implanter cet équipement, en contradiction avec la recommandation concernant la préservation des biens culturels mis en péril par les travaux publics ou privés adoptées par la conférence générale de l’UNESCO en sa quinzième session, à Paris le 19 novembre 1960.

Inégal combat où l’ouverture de ce nouveau front trouva les défenseurs du site désespérément démunis et impuissants!

Ne faudrait-il pas s’étonner que pareil organisme astreint plus que d’autres, en raison de sa vocation internationale, au respect de toutes les parties, ait sacrifié si injustement une part de cette richesse qui est le patrimoine d’un pays.
Tout homme ayant une responsabilité à l'échelle internationale ne pouvait ignorer que la commune de Carthage figure sur la liste du Patrimoine Mondial et qu'une laborieuse campagne de sauvegarde s'efforce depuis déjà plus de quinze ans de le mettre hors de l'atteinte des destructions.

La même somme qui a servi aux travaux des eaux usées aurait amplement suffit à la sauvegarde du site par la création d'un parc archéologique au bénéfice de toute la communauté reconnaissante.

Mais trève d'utopie! Voilà donc que se répand à travers les rues de la commune un convoi de monstres mécaniques des temps nouveaux, corps trappé affecté d'un long cou terminé par une mâchoire fœuse; elle s'enfonce dans le sol, arrachant pour l'avaler une bouffée de terre pétrie d'histoire qu'elle remonte et déverse dans la benne d'un autre monstre qui emporte son chargement au loin: mélange de blocs de pierres, de terre, de débris de toutes sortes ramenés au jour brutalement et, lorsqu'une certaine résistance se manifeste, ce sont des marteaux compresseurs qui en viennent à bout en les déchiquetant sur place. Tout ceci dans un bruit d'enfer et de fumée de graisse et de mazout.

Heureux, trop heureux site, s'il connaissait son bonheur d'être oublié des promoteurs internationaux. Leur sollicitude n'a fait qu'accroître sa destruction planifiée.

Durant deux années entières, en 1986 et 1987, les rues et les places de Carthage vécurent dans cette invasion d'un nouveau genre, de fureur mécanique, qui dota la ville d'un réseau d'égouts superposé au réseau de voierie.

Sur les terrains vagues, à la périphérie, stationnaient les campements transhumants des engins et de l'intendance: canalisation, ciment, gravier, sable et les remblais accumulés.

Durant toute cette période les engins mécaniques terrassèrent donc le sol de l'antique cité, ouvrant de longues et profondes tranchées, broyant et désintégérant sur leur passage la matière archéologique accumulée durant des siècles.

Interminable opération quiévaca des milliers de tonnes de remblais arrachés à leur contexte et livrant durant quelques heures deux parois moulant en coupes les vestiges sectionnés. Ensuite, dès que la canalisation était déposée, la tranchée était rapidement comblée avec du sable rapporté.

Voilà le sort que le sol de Carthage a vécu durant des mois.

Et cette destruction aurait été sans témoin ni témoignage si une équipe salvatrice ne s'était présente pour sauver ce qui pouvait l'être. Car lorsque le camion chargé partait évacuer son contenu de remblais et que la pelle fœuse s'immobilisait en attendant la bonne suivante, alors, dans ce court laps de temps d'arrêt, les jeunes archéologues descendaient dans la tranchée béante ouverte, au pied de la machine, à travers les parois encore fumantes de poussière, ou ruisselantes de boue; ils s'efforçaient par un rapide raclage de noter et de recueillir les indices fragiles et les sédiments brutalement mis au jour pour quelques heures.

Ainsi, à travers la tranchée qui avance, se dessine les grandes lignes de témoignages accumulés avec le temps: murs et pavements, superposés et sectionnés où l'horizon d'une mosaïque se réduit à une ligne de quelques cubes de tessères à travers la paroi.

Travail d'urgence opéré à vif sur le terrain durant le bref répit des engins ravageurs; comme un secouriste sur un champ de bataille, portant secours pendant l'accalmie, l'archéologue venant au secours des vestiges mutilés apparaît comme un baïf perturbateur, sinon provocateur. Car sa présence au milieu
de ce champ de destruction fait peser la crainte qu'une découverte dite sensationnelle ne vienne retarder ou arrêter le rythme d'une progression planifiée par le bureau d'étude et programmée par la rentabilité.

Ainsi l'archéologue, exclu de son propre terrain, s'interposait durant les brefs temps morts où les engins s'arrêtent pour faire le constat des dégâts. Apparemment personne ne s'émut que l'introduction du modernisme se pays au détriment des vestiges. Les égouts au prix d'un " delenda est Carthago " reconnurent. Seul, M. Ch. Klibi, maire de la ville, s'inquiéta de savoir si le service archéologique suivait la progression des tranchées. Ancien ministre de tutelle de l'archéologie tunisienne, il dut être affligé par le spectacle de tant de dégâts pour la pose de ces canalisations. Mais les travaux étaient engagés et le service archéologique était démembré, c'est pourquoi l'action de cette vaillante équipe d'archéologues peut apparaître comme une parade ou comme un défi vain.

Par son courage modeste, elle apparaît comme une protestation agissante, défiant la programmation ignorante et marquant sa volonté de revendiquer son domaine.

En réalité, malgré le fait accompli et l'extrême faiblesse de ses moyens, la Conservation du site de Carthage ne désarma pas. Elle suivit les opérations d'un bout à bout avec vigilance, veillant à leur stricte application, sans dépassement, imposant certaines conditions, fixant certaines modalités quant au creusement des tranchées, à l'évacuation des remblais, au transfert des remblais dans la zone de la Malga, domaine réservé à la récupération de certains matériaux dont les blocs, les colonnes, les chapiteaux, et menus objets amenés au musée. Tout ceci comme un pis-aller.

L'absence totale des moyens et des ressources, l'empechera d'intervenir positivement sur le terrain que se soit par la photo, les relevés ou les fouilles mêmes ponctuelles données par la possibilité de cette tranchée à travers le site.

Seule cette équipe britannique apporta la confrontation. C'est en cela que cette expérience humaine que scientifique apparaît comme un témoignage exceptionnel dont le rapport est ici publié dans ce numéro spécial du CEDAC.

Qu'elle soit donc remerciée d'avoir sauvé quelques fragments de ce qui a été irrémédiablement détruit dans l'ignorance.

Au-delà du témoignage historique, c'est aussi un appel à la conscience internationale, à la vigilance continue ; la sauvegarde du site de Carthage doit être une action permanente. Peut-être que saisie d'un regard retrospектив, la haute finance réparerait-elle d'une façon ou d'une autre le dommage occasionné, ne serait-ce qu'en respectant le territoire de la leçon d'histoire universelle apprise par tous les écoliers du monde. Toute marque d'intérêt pour le site de cette histoire aurait plus de retentissement que la réalisation d'un réseau de canalisation souterraine dans son sol.

La station de refoulement en construction sur le rivage de Carthage.

En踹edi

Abdelmajid ENNAABI
Conservateur du Site et du
Musée de Carthage.
Musée de Carthage
Tunisie.

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The team in June consisted of Guy Grainger, Lindsay Boocock, Chris Hames and Megan Butler all of whom worked strenuously with irregular hours to ensure that a maximum of information was recorded. Roberta Tomber read the pottery that forms the basis of our dating. In September I was assisted by Gary Evans. In Britain I received much encouragement and help from Prof. H. Hurst, Prof. Barry Cunliffe, M.M. Tomkisson. My parents gave much support and did much of the final arrangements of the June season.

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However none this would have been possible at all without the great kindness of Dr. A. Ennabli, director of the Carthage Museum.

THE SEWERS

The Office National de l’Assainissement has installed a new system of sewers throughout Carthage in 1994. Nearly every street in the town was covered. The trenches dug varied from side drains of 0.6m wide and 1m deep, to major arteries 3m wide and 3m deep. In some places the trenches barely cut through modern layers, in others they cut down to natural rock or sediment. They provided the first opportunity since the early 1900s for an overall view of the ancient city and its stratigraphy. We could record substantial continuous sections across the city (Rue des Sufates), and series of parallel sections in close proximity (Rue Sophonisbe, Ave. de La Republique, Rue Dag Hammarskjold, Rue Ibn Chabaa). (Fig. 1).

Generally the sewers ran down the centre of the modern streets. The gangs of workmen moved on continually filling the previous part of the trench behind them. One particular part of the trench section was only exposed for a few hours before it was covered. In the summer two or three gangs of workmen were working at once in different parts of the town.

RECORING

The speed with which the trenches were filled in meant that we were rarely able to conduct a completely satisfactory recording of the features. We were torn between following two or three trenches in different parts of the city at the same time. We adopted an overall approach to a trench designed to pick out the most important aspects of the stratigraphy as quickly as possible. First we would pick out the major walls and floors, recording them in plan and section. Following this we would try to draw a more detailed section including the other major layers. If there were any substantial deposits of pottery visible they would be sampled at this stage. If we were able to complete a detailed section we would then go back over the stratigraphy and pick out pottery from less prolific layers underlying the major features.

Given the speed at which we were forced to work it is natural that some streets will have been better recorded than others. We had to adapt our approach to the stratigraphy, and to the speed of the sewer workers. We recorded in more detail when they slowed down, and sometimes concentrated on the gaps between sewer pipes where man-holes were later installed. It was easiest to record the last stretch of trench dug at the end of the working day, because we could gain two hours the next morning to record it before the workmen arrived.

Sometimes we were not able to enter the trench because it was too deep or the digging was progressing too fast. When this happened we could only locate the major features in plan and measure their depth below the modern road. The modern road provided our datum for levels. In some cases we were able to take independent absolute levels above sea level, in others we based levels on nearby man-holes marked on official plans.

It was difficult to record the orientation of walls. The 1m width of many of the trenches was not enough to give us a secure line measured by tape, or a good edge on which we could take a compass bearing. In Rue des Sufates, Ave. du 2 mars 1934, and Rue Ibn Chabaa, major Roman walls ran right down the middle of the sewer trench.

DATING

By far the majority of pottery found at Carthage is redepotted from earlier periods. Although any sherd can be used as a terminus post quem for later layers and features, it may well be very unreliable. A consistent date is provided by large deposits, of large sherds and that do not seem to have been disturbed very much. In Rue des Sufates we recovered substantial quantities of pottery from below surfaces 4 and 6, which are probably reliable. In Rue Sophonisbe we discovered a major pottery
group of the sixth century BC (layer 262) which will be the subject of a separate detailed report. Sometimes we found deposits that could not be clearly related to the stratigraphy, and thus were not very useful.

Few coins were recovered from the trenches. In a few cases we were able to cut back the section over mosaics (80, 217, and 300). Their design gave us some ideas of dating. Other dates could be established on general stratigraphic grounds (see below).

In every case we recovered these finds by cutting back the sides of the trench, so that we could be sure that they came from a particular layer. We regarded all finds recovered from the digging of the sewer trench itself as unstratified.

RESULTS AND DISCUSSION

Presentation

Most of our data is fragmentary, consisting of a single cut through a feature, or building. We are in no position to assess the function of the structures that we recorded. The major significance of our records is as an aid to future more widespread excavations, such as those of the UNESCO project. Since the latter project is now beginning to be published we took the decision to publish the basic records of the 1986 work as soon as possible. These records, organised by modern street form the main body of this report. We hope that they will enable the stratigraphy of the individual sites to be fitted into a more general framework.

Our sections pass close to the UNESCO sites of the German, British, and both American teams. The consistence of our layer descriptions and identifications will allow a certain amount of comparability between these different areas.

We will now set out the major features and discoveries of the sewer project with what conclusions we can establish about the general topography of ancient Carthage.

Punic

Punic levels were recorded in the following streets - Ave. 2 mars 1934, Rue Taieb Mehiri, Rue Dag Hammerskjöld, Rue Sophonisbe and Rue Augustin. The earliest Punic layer identified in the excavation was layer 262 Rue Sophonisbe (Fig. 23) which proved to be an occupational deposit of the sixth century BC. This is the most northerly occupational deposit of the Archaic period recognised so far. It must be very close to the north edge of the city marked by Archaic tombs in the area west of the Antonine Baths (BCTH 1927 Plate 18). The deposit, and other questions of Archaic topography will be examined in a separate paper.

Late Punic buildings were securely identified in Rue Dag Hammerskjöld (Plate 7). In the western part of the trench we recorded two Punic pavements, 200 and 215, both composed of regular close-set ceramic tesserae with occasional white marble tesserae. These belong to the period after the re-organization of the city in the fifth century BC, that was identified in the German excavations a short distance to the east of this area (Rakob 1984). Pavement 200 was associated with a cobbled wall on a dressed stone foundation 201/5. At a lower level a wall of large blocks 212 ran east to west along the trench. It may have met a north to south wall 213. A dressed block Punic wall 139, of uncertain date was also recorded running north to south in the central part of Rue Taieb Mehiri (Fig. 13). In Rue Augustin we also recorded some Punic features of uncertain date (Fig. 28). They consisted of several occupational layers 322-3 & 335 associated with a wall 341. The wall was preserved in two courses of squared cobblestones running at an angle of 70° N. This probably relates to the contours of the Hill of Juno just to the west. We may thus suggest that the late Punic urbanism of the Hill of Juno follows the slope of the land as it does on the Byrsa. At the west end of Rue Sophonisbe we discovered two massive robber trenches 8m wide, 289 and 291 (Fig. 24). The west trench, 289, may be the foundation for the Punic sea wall, dated on the German site to the fifth century BC, (Rakob 1984). The second robbing could then be a later extension of the city in the second century that has also been identified on the German site. To the west of the recorded trench some moulded stucco blocks of El Bocouria were found. They probably came from the wall.

The Roman Terracing Levels

The layers lying between the Punic and Roman occupation, probably represent the most clearly identifiable stratigraphic horizon in Carthage. The upper part of the deposit is a thick layer of orange/pink pebbly sand. It has been located in Ave 234/393 - 58, Rue Baal Hammon - 115, Rue Taieb Mehiri - 140, Rue Dag Hammerskjöld - 186, Ave de la République - 275 Rue Sophonisbe - 226, 270, and 286. The character of the layer is best represented in the central section of Rue Augustin (Fig. 28). Below this layer there are tips of burnt clay, carbon, and mudbrick (see Rue Augustin, and Rue Sophonisbe). The identity of these deposits, and their dating is central to this report and the stratigraphy of Carthage since they are found on every site in the city.

Sherds of the second century AD were found in the orange layer 316 on Rue Augustin, and in layers 287 & 292-4 below the orange sand on Rue Sophonisbe. These finds suggest that the area between section 2 and 3 north, surfaces 9 and 19 east, was not developed until the second century. The finds from Rue Sophonisbe seem to predate the foundation for a major drain running south from the Antonine Baths (Fig. 25). The Baths themselves might be expected to have been built at the edge of the second century city, where they would be more open land.

It is becoming clear that the whole Roman city was not set out when the Augustan colony was founded, even though new districts of later date continued to use the same size of section (see Hurst 1988 pp.

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The dating of these deposits demonstrates that we cannot assume that all orange sand was a late Punic destruction deposit. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer was observed in Augustana, and that intact Punic layers, or layers of 166 BC may be more important as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits. The orange sand layer must be seen as Roman terracing rather than as Punic destruction deposits.

The Roman Street Grid
The Roman street-grid was originally constructed by Saumagne (BCTH 1924). The published plan is only at 1:1000; and our features were planned at 1:200 or 1:500. We hope to produce a more precise street-grid, but we were surprised how many problems we had in doing so. As we have already mentioned recent research is being carried out by the regular manner as has been supposed. We only identified one possible street surface on the east, and 4 central drains -172 (Cardo 11E), 187 (Cardo 14E), 218 (15E Plate 9), 270 (Cardo 16E). In many cases the streets were completely blocked. The information concerns the Cardines to the east of the city and its relation to the north-south Decumanus can best be represented in tabular form.

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Cardines 10 E, 16 E, and 18 E were not investigated.

Most of the blocking can be attributed to the Byzantine period, but those on cardines 11E and 12E were caused by massive Roman walls 37 and 159. In the case of 159 (Rue Ibn Chabani) the trench cut close to the north face of the wall and we were able to break into the sewer 172 where it had been blocked. The Byzantine blocking of Cardo 17E was noted on a house plot near the entrance to the Antonine Baths. We should note especially the blocking of Cardo 13E in successive insulae. Byzantine blockings of streets have been identified to the east of the church near the Supermarché, on Cardo 9E, and on the site of the second Canadian team (Ellis forthcoming, Wells and Wightman 1980). Our 1986 work shows just how widespread blocking was, and there must have been substantial traffic problems in Byzantine Carthage.
A tentative street-grid for north-east Carthage, based on 1986 results has been published in CEDAC Bulletin 8 1987.

The topography of the Harbour Area in the Roman Period

According to Saumagne the Roman street grid ends with Decumanus 6 south along the south edge of the Circular Harbour. In 1982 the American team excavated a small property with several cisterns (Ellis 1986) that lay on the southern edge of the harbour and was orientated at a tangent to the centre of the Harbour rather than being located on the street grid.

In 1986 we located the large Roman wall 37 which blocked the southern end of Cardo 11E, and ran along the modern Ave 2 mars 1934 (Fig. 4). At the west end of the street, near Ave Bourguiba, the wall 37 followed the orientation of the street-grid, but at its east end it turned onto the orientation of the 1982 site at N°18 Ave 2 mars 1934. All this implies that while the regular Roman street grid may continue to the west of the Circular Harbour different alignments relating to the harbours themselves were used to the south, and Decumanus 6 south did not exist there.

This is confirmed by the excavation along Rue des Suffêtes, some 30m west of the Rectangular Harbour. Here we discovered the central sewer (10) of a Roman street running out of the city parallel to the harbour (Fig. 2, Plate 1). The fact that it still had a central sewer so far south of the main city may suggest it was a major exit road from ancient Carthage. The date of the sewer is some time after levels of the fourth century. Its walls and floor are made of irregular cobbles in grey mortar that is presumed to have first been used at Carthage during the construction of the Theodosian city wall.

At the north end of Rue des Suffêtes the trench cut 15 masonry vaults (Fig. 3, Plate 2). The sixth vault from the south continues west to form the north side of the present tophet site, whilst the remaining five form the eastern limit of three vaults (Stager 1978). All these were dated the structure to the early fifth century, and suggested a function as foundations for warehouses. A square block of eight vaults is recorded by the Carte Archéologique of the 1930s. To the east of the vaults the Chicago team found a stone paved area. We recorded a similar stone paving to the south of the vaults (Plate 3), and we believe it continued over the top of them forming a floor.

Other Roman Features

As we have said, we did not have enough of a building to identify its function. Virtually every trench produced some roman walls, and it does not seem worth listing all of them. Only in Rue Augustin, because of the angle at which the trench cut through the insula, were we able to reconstruct a line of six rooms close to Cardo 9E.

We only found one mosaic of the Roman period 217 (Fig. 19, Plate 8), which had a thick mortar bedding and a geometric design, most of the mosaics discovered were probably Byzantine (see below). 10 cisterns in a variety of forms were recorded - 126, 129, 132, 145, 147, 170, 216, 256? 292 and 342. The complete plans of few of them could be restored.

Byzantine

Most streets produced evidence of Byzantine occupation. This was similar to that found on most UNESCO sites - rough walls with earth and poor mortar bonding; earth floors with dense carbonate occupation. 6 probable Byzantine mosaics were found - 80, 88, 92, 223, 233, and 300. They were characterised by the large size of their tesserae and their thin mortar baddings. When the section was cut back above 80 (Rue Khereddine), and 300 (Rue Augustin) they were both found to have complex, though very similar, geometric designs in black and white.

While the mosaics may date to the Justinianic era, much of the dense occupational deposits may be assigned to the seventh century (Ellis 1985). They strengthen the picture of a very densely occupied city, crowded with people living in buildings of poor architectural standards, with floors covered in refuse. As discussed above many of these poor buildings blocked the earlier Roman streets hindering circulation. In Rue Augustin we recorded a tomb built of stone slabs (310, Plate 11), located on the northern edge of Decumanus 2 north. On top of the cover slab was a crushed amphora of the fifth century. However it is possible that the tomb may date by the sixth century, when irregular burial is recorded from many sites within the city.

RESCUE ARCHAEOLOGY IN CARTHAGE

The 1986 project can be seen as a series of sondages of Carthage stratigraphy taken across the city. It was not a sampling strategy as the location of the trenches was dictated by the laying of the sewers, not by archaeological considerations. However the project can be used to evaluate the use of a sondage strategy in a modern Mediterranean town. The work was undertaken in 'rescue' conditions under the continual pressure of developers or builders. The 1986 work can suggest how future archaeological sampling and rescue archaeology can solve problems of the ancient city. The work of Saumagne which resulted in the recognition of the Roman street grid can be seen as the first sampling project at Carthage. By integrating a large number of observations from different parts of the city he was able to reconstruct the lines of Roman streets. Since Saumagne many large excavations, particularly those of the UNESCO teams, on permanent research sites, have changed our knowledge of the city.

The 1986 programme has enabled us to put the UNESCO sites into a more general perspective, just as Saumagne did with major excavations of his day. Thus a more general view of the Archaic Punic city has

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emerged from the deposits of Rue Dag Hammerskjold, and Rue Sophonisbe to supplement the results of the German team of Dr. F. Rakob. New information on the topography of the harbour area can be fitted in with the work of the British team of Mr. H. Hurst, and the American team of Prof. L. Stager. In both of these cases our trenches have broadened the results of the UNESCO work, while remaining dependant on the larger carefully dug research sites for dating evidence.

The 1986 project was also able to test two general hypotheses concerned with the overall stratigraphy of Carthage, and to come up with a new perspective. The first of these was the Roman terracing deposit. Our detailed notes of this layer in many areas of the city can be compared with the stratigraphic notes from the UNESCO sites to give us a better appreciation of how it came to be formed. We have shown how the deposit can consist of very disparate chronological elements laid down up to three centuries apart, the destruction/Roman terracing is the easiest layer to identify across the stratigraphy of ancient Carthage, but we need to be able to separate out the Punic and Roman elements.

The second major stratigraphic consideration that we have re-examined is the Roman street-grid. We certainly found Roman streets much harder to locate than one would have expected from earlier work. The two huge Roman walls 37 and 159 that block streets indicate that Saumagne's 'street grid could be more than just a reality. Second century sherds in the terracing levels on Rue Augustin and Rue Sophonisbe have led us to suggest that Saumagne's plan was not such a unified conception as has been thought before.

These results indicate that rescue archaeology does have value at Carthage, and can reassess many aspects of the general history of the city. They indicate several different directions with future rescue work could take.

A few years ago no one would have considered it worthwhile trying to excavate Roman streets at Carthage, because they were considered already known after Saumagne. Recent research, including the 1986 work has proved that the Roman street-grid was an ideal, that some streets may not have existed, or were blocked. Different parts of the grid date from different epochs, and simply mimicked or continued the earlier form of insula. Sondages across streets can prove whether streets did indeed exist, and which part of the urban network were added at certain periods. An important consequence of the redating of portions of the street-grid is that we now need to reassess the limits of the Augustan colony. The blocking of streets implies that there was a restricted pattern of circulation across the ancient city, and this needs to be assessed to judge the importance of various districts. Another area where the general topography of the city needs to be tested is around the ports. This area is outside the street-grid, as defined by Saumagne, and although it has been suggested that there is a change in orientation just to the north of Saumagne's proposed Decumanus 65. The new orientation matched the central axis of the ports. Beside the Rectangular Harbour the 1986 work has enabled the north, south, and east edges of the fifteen 'warehouse' vaults to be established, but we do not know where they end to the west beyond the topet. The 'warehouses' themselves must have determined much of the surrounding topography. Sampling strategies could also be adopted to test for more specific features of the urban topography. The simplest example of this would be the tracing of the city walls Punic and Roman, whose lines have been considerably clarified as a result of the UNESCO project.

1. **RUE DES SUFFETES** (Recorded by Lindsay Boocock & Chris Haynes)

**Location**

Parallel to the west edge of the Rectangular Harbour 50m away from the modern water's edge (Fig. 1).

**Excavation strategy**

This was one of the largest trenches recorded, about 5m wide and up to 3m deep. It provided an ideal section through the harbour facilities of the Rectangular Harbour. However the area was not densely occupied, and archeological strata were not as dense as in the centre of the city. We therefore tried to record structures, and representative sections when they could be reached between shuttering, and pipe-laying. Though we could not record all layers, we should emphasise that we did see the whole length of the trench and all the stratigraphy.

**Summary of features**

**PUNIC:** no features or layers of this period recorded. A few sherds were found in one of the 'warehouse' vaults. The Chicago team working at the north end of the street in the 1970s found that all Punic layers lay below water level (Stager L. 1978, p. 168).

**ROMAN:** decisive surfaces or mortar and clay appear to have formed a harbourside yard in the second to fourth century AD. A major street with a regular central drain ran through the area parallel to the water's edge. At the northern end of the Harbour 15 vaults or structures fronted the street. They were covered by a heavily flagged floor, and probably supported warehouse structures.

**Detailed stratigraphy.** (From south to north)

1. Wall, about 1.5-2m wide running at an acute angle across the trench. The central core consists of 70% Hamilcar sandstone cobbles set in grey carbonate mortar with a few amorphous pot fragments. The north-west side of the wall was cut by a 45-50cm wide robber trench that presumably removed a dressed facing. Preserved top of the wall 2.4-2.8m ASL. This type of masonry is generally presumed to have first
been used at Carthage for the construction of the Théodosian town wall. A theodosian date for wall 1 would suggest that it was later than iron-panned floors 2 and 7 on its north-west and south-east sides.

A. Layers on the south-east side of wall 1 (Fig. 2).
2. Sandy orange, 'iron-panned' hard surface, about 5cm thick, 1.93m ASL. Runs continuously along south-east side of wall 1. Above 2.
3. 2cm thick layer of occupational debris, grey sandy loam with large quantities of carbon. Above 4, below 2.

4. 15-20cm thick layer of brown sandy debris, containing c.30% pebble stones. Above 5, below 3. Pottery probably fourth century AD.
5. Floor of desiccated mortar and earth c.15cm thick, running continuously along south-east side of wall 1. Above 6, below 4. Top level 1.82m ASL.

B. Layers on the north-west side of wall 1.
7. Sandy orange, 'iron-panned' hard surface, about 5cm thick, 2.2m ASL. Continues to run to the north at least 10m of north of sewer.

POTTERY. Early to mid-third century AD.
8. Small oven located about 5m due west of line of Wall 1. Cut into iron-pan floor 7. The oven was c. 2.5m in diameter, and showed signs of a red clay burnt surround. Slight disturbances of the surfaces to the north may suggest the presence of a stoke-hole or working area. No signs of slag or pottery wasters so presumed to be domestic hearth.

C. Layers associated with street (Figs. 2 & 4).
9. South-east street front. Rough cobble construction set in grey mortar. c. 50cm wide.
10. Central sewer of street, preserved to 75cm above floor (ie vault, and street above, were hot reserved). Floor & sewer 1.62m ASL. Walls 1 floor built of coursed (6 courses preserved) cobble masonry set in grey mortar. Sewer channel is c. 50cm wide filled with c. 20cm of carbonate silt. (Plate 1).
11. 40-50cm wide water channel marking north-west edge of street, c. 3m away from sewer. Floor of channel 1.62m ASL. Walls & floor built of irregular cobble masonry set in grey carbonate mortar. This channel has a smoothed mortar lining, which the sewer does not. The whole masonry structure of the channel and both walls was c. 1.5m wide in the oblique section of the trench.

D. Layers predating 10 and 11, below the north-west half of the street. (Fig. 3).
12. Thin red sandy clay, possible outside surface. Above 13, below modern.
13. Debris. Sandy loam, 10-20% pebble stone, 5-10% granule mortar. Above 14, below 12.
15. Debris. Sandy loam, 5% pebble stone, 10% granule mortar, 5-10% granule carbon and green organic flecks. Above 16, below 14.
18. Red sandy clay debris, 15-20% granule carbon, 10% granule mortar. Above 19, below 17.

Interpretation of section layers 9-21. Layers 12-21 represent the same kind of outside surfaces observed at the south end of the street (layers 2-6). A disturbance is clearly visible cutting layer 14 to north. This is the foundations for the water channel 11. Adding a vault above 10 the street surface would have been some 70cm above layer 12, which is the latest of the early surfaces. This would give the street an elevation of around 2.8m ASL. A similar sequence was observed on the opposite side of the trench.

22. Some 15m further up the trench from the street area a red clay surface perhaps burnt, was observed in the western side of the trench. It was c. 5cm thick and lay at around 1.5-6m ASL. The surface was observed for at least another 5m to the north.
23. About 25cm to the north of 22 the west side of the trench cut a shallow V profile feature, 2m across, and 60cm deep. The bottom of the V pro-

file was 0.82m ASL. It was filled with a granular, though hard, tip of mortar containing some pot fragments. It did not continue on the other side of the trench, and so may have been some kind of foundation for a free-standing feature.

The feature 23 was cut into a yellow clay layer, that was a continuation of 22 further to the south. Below 22 a variety of occupational layers were not recorded in detail.

F. Layers associated with the 'warehouse' vaults. (Figs 3 & 4, Plate 2).
At the north end of Rue des Suffêtes the trench hit a line of fifteen masonry vaults running east to west across the trench. Though we planned each one, it does not seem worth presenting a detailed description of every one. Some of the vaults are already known from the preserved remains in the Tophet, and the excavations of the Chicago team (Stager L. 1978) We therefore describe a typical section, and some more unusual features.

24. Stone flagged floor. This was first located at the junction of Rue des Suffêtes and Rue Terence, at 1.75m ASL. Only occasional flags were preserved. They were very large, around 50 X 50 X 40cm. The flags lay on top of a clay bedding with iron stains like 2 and 7. A series of loose mortar compactions lay over the flags. (Plate 3).

Plate 2. Rue des Suffêtes, modern drain cutting through 'warehouse' vaults.

Plate 3. Rue des Suffêtes, flagged floor.
Floor and bedding 24 continued for another 30m to the north where it hit the first of the fifteen vaults. There are some, inconclusive signs, to judge by the occasional flag, that the floor continued over the top of the vaults, though the area above the vaults had been disturbed.

Vault 7 (Fig. 4).
(Vaults were numbered from the south).

25. Masonry structure of vault. Each vault was about 3.5m wide. We were able to examine the walls to between 2 and 3m in depth from the top of the vaults which generally lay about 1m below ground at 2.2-2.6 ASL. The central portions of some vaults had collapsed slightly. The masonry consisted of irregular rubble in a yellow mortar. Excavations by the Chicago team proved that these vaults were trench built (Stager L. 1978, p. 165) and that the fills inside them are remains of earlier, layers that the vaults cut.

27. Pebble tip inclusions of 10% granule mudbrick, and 10% granule carbon. 27 and 29 are probably to be regarded as fills of a foundation for the north wall of vault 7 that then collapsed through subsidence.

28. Loose sandy debris. Appears to be a loose sandy level that slid down beside the wall of the vault after 27 and 29 subsided.
29. Loose debris. Sandy loam, 40% granule mortar 20% pebble stones. (For interpretation see 27).
32. Sandy debris, 60% granule mortar. Above 33, below 31.
33. Occupational debris. Sandy loam, 30% granule carbon, below 32.
34. Debris. Sandy loam, 40% granule mortar, 20% cobble stones. Below 26 & 35.
36. Grey mortar wall inside vault 7 on east side of trench. The masonry as cut obliquely by the trench is 1m wide. There is a gap in the roof on this side, and it is not entirely clear whether this foundation is earlier or later than the vault. 36 has a charcoal flecked mortar whereas 35 has yellow mortar.

RUE DES SUFFETES

Fig. 4. Rue des Suffetes, sections.
CONCLUSIONS

Not surprisingly, the area next to the rectangular Harbour, never seems to have been densely occupied in Roman times. Rue des Sufèfes provides us with a complete section about 50m away from the ancient quay wall.

During the third to fourth centuries AD the area was floored by a series of outdoor dessicated surfaces ~2,7,12,17,22. We feel sure that we did not miss any structural features that cut across the trench south of flagged floor 24.

The best chance for the dating of the fifteen masonry vaults at the north end of the street is from the results of the Chicago excavations of the 1970s. At the moment we can confirm their preliminary findings (Stager L. 1978, p. 165) that the latest fills cut by the vaults date to the Theodosian period, and the construction probably took place in the early fifth century.

We would like to place the construction of the street 9-11 and the southernmost Wall 1 in the first quarter of the fifth century. This conclusion is based on the latest fourth century pottery from 4, and the charcoal masonry of the structures that is normally considered to have first been used in the Theodosian city wall. It should be pointed out that the street with its central sewer and side gutter must be seen as a major road rather than a track or alley. This is significant when one realises that it is the southernmost regular street recorded from Carthage and is situated 350m to the south of the urban zone as identified from the calculations of the street grid by Saumagne (1924). This road below Rue des Sufèfes could be a major exit road from the city, and was certainly important for moving supplies between the port and the urban centre.

In sun we can envisage the harbourside of the Theodosian period as Wall 1, delineating the quayside some 30m from the water. 12m to the west was the road 9-11. Fronting the road at the north end of the Harbour (ie the end nearest the city centre) were the fifteen vaults, covered by a thick flagged floor 24. It is perhaps most likely, following Stager (1978, p. 153) that the vaults supported some kind of warehouse structures.

2. AVENUE DU 2 MARS 1934.

Location
This street runs from along the south edge of the Circular Harbour west to Ave. Bourguiba.

Excavation strategy.
The trench was about 2.5m wide and at least 3m deep. It was very difficult to record features inside it as the workmen were not co-operative, and the trench was very difficult to leave as it was so deep. We were able to draw the main sections (Figs 6-7) in an area that had been left open for the installation of a man-hole opposite Rue de l'Hacienda. We had particular problems at the west end of the trench and were unable to record much in detail.

Summary of Features
PUNCT OR AUGUSTAN. A strange structure (wall or floor) formed from alternating layers of yellow and brown clay (57), 80cm deep, was recorded. It contained abraded pottery of third to second century BC, but architectural parallels suggest an Augustan date.

ROMAN. Two very large walls 37 and 63 ran approximately east to west down the trench. They must be associated with Roman terracing work. The eastern wall 37 makes a turn through 30° marking the change in alignment from the Roman street grid to that of the Circular Harbour. Several later side walls were located running away from wall 37 to the north and south.

Detailed Stratigraphy (From east to west):
A. 37. Large Roman wall running the length of the trench in the east half of the street. It was preserved to a height of 2.4m, and was 1.75m wide. The construction was a sandstone rubble core set in yellow mortar. It was first observed emerging from the south baulk of the trench opposite the junction between Rue de l'Hacienda and Ave. 2 mars 1934.

At this point we noticed a 1 X 1m cut in the top of the wall that may well have been the setting for an annus praebium column (similar settings some distance above the foundations can be seen in the major terracing wall on the site of the 2nd Canadian team). The base of the cut was at 3.05m ASL. The cut had been filled in with a later blocking formed of squared cobbles set in earth. From this point the wall ran east 21.4m at a bearing of 110° before turning to 140°. The wall continued in this direction for another 8.6m before disappearing under the south baulk of the excavation.

B. Sections XI-X4 (Fig. 6) - Layers opposite Wall 37
38. Fieldsoil layer, dark loam with cobble stones. Above 39, below modern.
39. Late side wall running of to north away from wall 37. Cobble stones set in earth. Above 40, below 38.
40. Yellow sand containing large amount of granule mortar. Floor? Above 41, below 39 and 43.
42. Occupational debris, dark loam with much charcoal. Below 41.
43. Large pit. Fill of alternating lenses, 3cm thick of occupational debris, mortar debris, and green/yellow sand. Above 40, below 38.
44. Orange/yellow mortar. Floor? Above 45,52, below modern.
45. Small tip of carbonate debris. Above 49, below 44.
46. Brick or burnt clay floor. Above 47, below 49.
47. Yellow sandy clay including small quantities of mortar and stones. Above 48, below 46.
48. Yellow sandy clay with just a few stones. Above 49, below 47.
49. Destruction debris, containing carbon, bricks and ash. Above 46, below 45.
50. Debris. Sandy clay containing some pebbles, and granule carbon. Above 51, below 49.
51. Dark brown clay with a few pebbles. Below 50.
52. Debris, robbing? of wall 53. Sandy clay, many pebbles, and mortar. Above 53, below 44.
that the first associated floor was 46. Presumably it originally ran south to meet wall 37. It does not appear in our south baulk at this point (see following section) but may have run just to the east of our recorded area. Base of wall 3.15m ASL. D. Section Y1-Y2 (Fig. 7) - Layers on S. baulk, 4m W. of wall 37.

54. Modern road foundation, and fieldsol. 55. Wall of hewn Hamilcar sandstone cobbles set in yellow mortar. 2 courses deep running east-west. Above 56, below 54. Half way up the wall at the west end there were traces of a mortar lip, that suggests the level of a floor. Base of wall at 3.3m ASL.

56. Brown sandy loam. Debris bedding. Above 57, below 55. 57. Late Punic or Early Roman wall of floor. Three layers of brown clayey sand (57A), separating two layers of yellow clay mudbrick (57B). Above 60, below 56. Layers 58-9 cut back behind 57 at an acute angle, yet we were unable to find the other side of 57 by digging through it. It is therefore impossible to gauge its width, or to determine wether 58-9 are a disturbance cutting 57, 57 is a structure very similar to Augustan floors on the German site (information from Prof. F. Rakob, who saw our remains), but the 80cm depth of 57 seems rather great for a regular floor. Top of 57 at 3.25m ASL, base (including 61) at 1.95m ASL.

POTTERY. Water- abraded sherds from the end of third century BC or possibly the beginning of the second century BC.

58. Red sandy clay with occasional grey clay? bricks. Above 59, below 54. This layer strongly resembles the typical Punic debris layer that was redeposited to form the Roman terracing. It could be redeposited in a disturbance cutting 57, or 57 could be the remains of some structure covered by 58-9 during terracing operations.

59. Brown clay and rubble - 50% cobble-boulder size stones. Once again it is hard to know wether to regard this as demolition or pit fill. Above 61, below 58. 60. Grey sand, ash? Below or possibly part of 57. Above 61. 61. Yellow sandy clay, 20% pebbles. Probably the lowest part of 57. Above 62, below 60. 62. Brown clay underlying structure 57/61.

Interpretation Sections X1-2 and Y1-2. Layer 62 on the south baulk is almost certainly to be equated with layer 51 to the north. There is not so much sign of 57 structure to the north. There are two yellow clay layers 47-8 in the north, but none of the alternating brown and yellow clay of 57. We
CONCLUSIONS.

The street produced two groups containing Punic pottery of the third to second century BC. One of these, containing solely Punic sherds came from the strange clay structure 57; the other also containing Early Roman sherds came from the red/brown clay 65 at the east end of the street. Punic developments in this area are important for the understanding of the urbanism of the port area. Unfortunately the dating evidence for clay structure 57 is not good (abraded sherds), and architectural parallels may indicate a Roman date.

Both layers 58-59 and 65 could be associated with Punic destruction redeposited in Roman terracing work. Layers 58-59 are closely related to clay structure 57, post-dating it, whether they be disturbance or terracing deposit. Layer 65 may put this terracing operation in the second century AD or later. It was probably during this major development that both the large east-west walls 37 and 63 were built.

The orientation of walls 37 and 63 are significant. The alignment of wall 63 (118°) is extremely close to that of the Roman Decumanus (120°). The western part of wall 37 (110°) is also within 10° of the Roman street. The Roman Decumanus VI South pass about 40m south of the modern Ave 2 March 1934. It is in fact the last regular street of the presumed Roman street grid. However, the eastern part of Wall 37 turns 20° away from the Roman street grid to 140°. This alignment seems to be governed by a frontage facing the centre of the Circular Harbour. It is also close to the frontage of Roman buildings excavated by the American team in 1982 (ELLIS S. 1986) on the mid-south edge of the Harbour. It thus appears that we have located the point where the urbanism of the harbour area meets that of the main city. Cardo 11 East should pass through the preserved remains of Wall 37 just at the point where it turns but we saw no sign of it. There are clearly several question marks raised about the southern end of the street-grid in this area, which will only be resolved by further excavation.

We may note that if Wall 37 and 63 continued towards each other on the same alignment they would pass about 10m apart. It may well be that two such large walls so close together cannot represent simple terracing but could have supported a public building. (The comparison with the large terracing wall on the site of the 2nd Canadian team is again instructive).

During the later history of this building, or buildings, several shallow founded north-south walls were added, notably walls 53, and 39 which would have blocked the space between walls 37 and 63.

3. RUE DE L'AMIRAUTE. (recorded by Guy Grainger).

Excavation Strategy. The street was recorded at the end of the season on a day when we were busy in several areas. Because of this our recording was not very complete. The trench was a shallow one, only about 1m wide.

Summary of Features. All the features found can probably be dated to the Vandal or Byzantine period. At the east end of the area were two major floors, one of mortar, and one stone flagged. Further west just near the line of Cardo 10 East were a pair of columns preserved in situ.

Detailed Stratigraphy (From East to West) (Fig. 9):
A. 66. White mortar floor. 3.6m ASL.

POTTERY. Late fifth century AD.
D. 69. Lense of orange sand.
E. 70. White mortary debris. Above 75, below 68.
F. 71. Stone-flagged floor 3.75m ASL. Above 73, below
72. Yellow/brown earth containing many pebbles, and a number of cow bones just above floor 71. Above 72.
73. Brown sandy loam with large amounts of carbon. 
Flag bedding. Above 74, below 71.
74. Yellow/brown sandy loam, containing much pebble 
yellow mortar. Above 75, below 73.
75. Yellow/brown clayey loam. Below 74.

POTTERY. Mostly first century, 1 ? LRA2 late fifth 
century?
76. Occupational debris. Silty loam, with large 
quantities of carbon and lenses of orange/brown 
sandy clay. Above 77, below 70.
77. Grey sand with large amounts of carbon. Occu-
pational debris. Above 78, below 76.
78. Yellow/brown sandy clay with patches of yellow 
sand carbon, and mortar, below 77.

C. 79. A pair of columns with bases found 10m west 
of main section, reported by the workmen, but not 
observed by us. They were apparently found on the 
north edge of the trench standing upright and 
tipping slightly towards the south. The columns 
were about 1m apart.
We found that they were 1.14m long, and 0.38m 
diameter. The bases measured 0.48 X 0.62 X 0.62m.

CONCLUSIONS
All these features can most probably be placed in the Vandal or Byzantine period. The report on columns 
79 is trustworthy. This street was worked at the end of the summer when we had a good relationship with 
the workmen. The columns are very close to the line of Cardo 10 East though they are orientated at 90°
to it. Perhaps they come from some form of entrance way.

4. **RUE KHEREDDINE.** (Recorded by Guy Grainger and Megan Butler).

**Location.** Rue Khereddine runs east to west from Ave Bourguiba to the sea, one block to the north of Rue de l'Amirauté. The section we recorded is at the west end of the street near Ave Bourguiba.

**Excavation Strategy.** We had too much to record in this trench and too little time to work on it. We managed to cut back the section and clean off part of mosaic 80. We would have liked to have done the same for the other mosaic, but we were moved on as the workmen wished to fill in the trench.

**Summary of features.** We identified three mosaics (80, 88, 92) and the walls/robber trenches that limited them. All the features are probably to be placed in the Byzantine period.

![Plan of Rue Khereddine](image1.png)

**Fig. 10. Plan of Rue Khereddine.**

**Detailed stratigraphy.** (From East to West).

A. 80. Geometric monochrom mosaic. (Fig. 11). An area 1.25 x 0.3m recorded on cutting back the south baulk of the trench. The design includes peletas framing diamonds and squares within circles, executed in blue/black tesserae against a white background. Signs of a repair in opus signinum on its south edge. Below 81, 5.95m ASL.

81. Orange/brown sandy loam, containing plaster and mortar. Above 80, below 82.

Both 81 and 82 appear to be some form of destruction debris.

**Pottery.** 2nd century or later.

92. Grey sandy loam, many pebbles, carbon, and mortar. Above 81, below modern.

83. Thin yellow sandy mortar bedding for mosaic 80. Disturbances were identified cutting through the mosaic to east and west.

**B. Section.** (Fig. 11).

84. Occupational debris, containing large quantities of carbon. Above 86, below 87.


86. Orange brown sandy loam, below 85.

87. Yellow sand and pebbles. Above 88, below modern.

88. Two patches of mosaic. (Both only examined in section). Eastern portion had small tesserae. Western portion large tesserae, mostly in green and yellow. It is bordered by two stones on its west side that could represent a wall later cut by 9. Both areas have a very shallow mortar bedding 6.0m ASL.

![Section of Rue Khereddine](image2.png)

**Fig. 11. Rue Khereddine, section, south face, and plan of mosaic 80.**

89. Mortar bedding or emplacement. The horizontal portion of this level was white, but the raised area at one end was yellow and could be seen as a separate layer. It is unclear whether it formed part of the bedding for mosaic 92. Above 86.

90. Patch or small disturbance of light sand containing a little carbon. Above 89, below modern.

91. Irregular wall foundation of Hamilcar cobbles set in earth. Above 89, 89.

92. Mosaic of large tesserae, on shallow mortar bedding 6.0m ASL. Above 89.

93. Pit or disturbance with earth and rubble fill. Above 97.

94. Wall foundation of charcoal flecked mortar robbed by 93?
CONCLUSIONS.

As with Rue de l'Amirauté it seems that we are dealing with the latest period of occupation at Carthage. All the mosaics here have the characteristic thin bedding of the Byzantine period. The monochrome design of 80, and the charcoal-flecked foundation 94 afford other indications. The stratigraphy in general from Rue de l'Amirauté and Rue Kheredidine is reminiscent of that on the University of Michigan site one insula to the west. (Ellis, S. 1980). Mosaic 80 is located on the west edge of Cardo 11 East.

APPENDIX

Two adjoining 'cigar-shaped' cisterns were photographed during house construction on the north corner of the junction between Rue Kheredidine and Rue Belissaire. They are presumably of Punic date.

5. RUE BAAL HAMMON. (Recorded by Guy Grainger and Lindsay Boocock)

Location. Runs north to south, parallel and one block east, of Ave Bourguiba. It runs north from Rue de l'Amirauté to Rue Fr examining axe. We recorded a trench running north from the junction with Rue Kheredidine, to the junction with Rue Belissaire.

Excavation Strategy. We were not given much time to record a very complex and puzzling sequence. We had no time to cut back over the mosaic, and not enough time to fully record the wall complex at the south end of the trench.

Summary of features. PUNIC. We examined one layer (115) containing late Punic pot and early Roman to the second century AD demonstrating that it was redeposited for terracing. ROMAN. There was one mosaic (103) that may be of mid-Roman date. At the south end of the trench there was a very complicated wall sequence running east to west. The use of charcoal-flecked mortar may suggest a Theodosian or later date for some of this structure.

Detailed stratigraphy. (From north to south) (Fig. 12).

95. Brown sandy loam. Above 96, below modern. Same as 111.
96. Occupational debris. Silty clay, much granule carbon and mortar. Above 97, below 95. Same layer as 113?
100. Grey/brown clayey loam, some pebbles. Above 101, below modern.
101. Orange/brown sandy clay with granule yellow sandstone. Above 105, below 97, 100
102. Silt containing much carbon. Occupation?
Above 99, below 101, 106.
103. Mosaic (only observed in section) green and yellow tesserae. Below 99 5.0m ASL. Below 99, below 101, 106.
104. Mosaic bedding. A thin layer of yellow mortar, with a layer of pebble mortar and stone below. Below 103.

POTTERY. Late fourth to early fifth century AD.

109. Dressed stone block set in yellow mortar. Wall?
Above 108.
110. Yellow/brown sandy loam. Above 111, below modern.
111. Grey/brown sandy loam, with large quantities of carbon. Above 112, below 110. Same layer as 95?
113. Grey/brown clayey loam, with much carbon. Occupational debris? Above 112, below 110. Same as 96?

POTTERY. First to second century AD.

117. Small tip of grey/yellow silty sand. Pit fill. Above 118, below 114.

POTTERY. At least fourth century AD.

120. Wall foundation. Constructed of large Hamilcar blocks set in grey charcoal flecked mortar.
121. Wall foundation just south of 120. Seems to be a
separate foundation as constructed of cobble size Hammurian stones set in yellow mortar.

122. Yellow mortar surface. Wall or floor?

CONCLUSIONS.

This is a very complex section that is difficult to interpret. The coloured composition, and good bedding of mosaic 103 may indicate a mid-Roman date. The mosaic can then reasonably be cut by later disturbance to the south 106. Layer 115 is reasonably interpreted as typical Punic debris redeposited in Roman terracing operations. The finds it has produced, and its composition are comparable to other similar layers in Rue Sophonisbe (286), and Ave 2 march 1934 (58). If this is correct then there may be a slight rise in floor level between 106 and 115.

The walls at the south end of the trench are also hard to explain. 119-123 could all represent one massive wall, but then the whole foundation would be 9m across. 120-3 could be a wall with a rubble core (121-2) and dressed facings (120 & 123), in all 4m across. The trench is too small for us to understand the feature clearly. The presence of charcoal flecked mortar in the 'facings' 120 and 123 may suggest a Theodosian or later date.

6. RUE PLINE.

Location. Rue Pline runs from Ave Bourguiba east to the sea just opposite the 'Le Passage' Supermarket. It passes the north end of Rue Baal Hammon (see above) and further east crosses Rue Taieb Mehiri (see below).

Excavation Strategy. The central part of the street between Rue Baal Hammon and Rue Taieb Mehiri was trenched in June, but no ancient features were seen, except an unstratified column drum. In June a cistern was recorded (129) in a side culvert near the sea. The rest of the features mentioned below were recorded when the main trench was continued here in September.

Summary of features. The modern trench just cut the top of the ancient levels in the area - two Roman cisterns (124 & 129), and two mosaics (127 & 130) that may well be Byzantine.

![Plate 4. Rue Pline, cistern.](image)

Detailed Stratigraphy. (From west to East).

124. Roman cistern 1.8m wide. Central wellhead 54cm high and 60cm wide. Top of well-head at 3.1m ASL. Built with cobble stones in white mortar.
125. Rough mortar surface about 10cm thick at 2.63m ASL.
126. Roman wall 40cm wide built of cobble stones set in yellow mortar. A pit cut between 126 and 127.
127. Mosaic 50cm wide and preserved on both sides of the trench, thus over 1.5m wide. 2.63m ASL. Thin mortar bedding suggesting late date.
128. 3cm deep layer of dense carbonate loam above mosaic 127.
129. Roman cistern at east end of modern street. Only top of vault visible (Plate 4).
130. Plain white mosaic with large tesserae. Laid directly over 129. 2.8m ASL. Preserved width of mosaic 1.1m.
131. Fill of brown sandy loam cutting 130 on both sides.

CONCLUSIONS.

All the recorded features lay right beneath modern levels. Mosaics 127 and 130 both seen late, 127 because of the thin bedding. 130 may be compared with Byzantine mosaics over a group of cisterns on the British north harbour site (Hurst H. 1977). Cardo 16 east should run between features 124 and 125. It may lie deeper unless 125 is itself a late street. We may note the 47cm difference in level between 124 and 125 that could be due to the change in insula. Decumanus 2 south should run just to the north of Rue Pline, and the features recorded here may front onto it.

7. IMPASSE DES VALLEES.

132. Two blocks to the south of Rue Pline we recorded a Roman cistern 5m from the sea wall. A shallow modern drain trench just barely cut the roof. The cistern appeared to be 1.8m wide.

8. RUE TAIJE MEHRI. (Recorded by Simon Ellis and Gary Evans).

Location. Runs from the Circular Harbour north, two blocks away from the sea. We recorded a section of trench just to the north of Rue Pline.
Excavation Strategy. This trench was dug the day we left Carthage in September. This timing, and the logistical problems of hindering the workmen in a deep trench did not allow us to record everything fully.

Summary of features. Punic. A large block foundation seemed to run for about 30m down the length of the trench.

Roman. One east to west wall was recorded, as well as some occupational deposits and minor surfaces.

Detailed Stratigraphy. (Figs 13 & 14).

133. Rough mortar floor c. 5cm thick. Above 135.
135. Dark brown sandy loam. Above 134, below 133.
139. Wall foundation or 3 dressed Hamilcar blocks running roughly north to south along trench. Top 2.33m A.S.L., below 140.
141. Wall running east to west across trench. 60cm wide 5 courses high. Rough hewn cobble facing with rubble core. Yellow mortar. Base at 2.45m A.S.L. Robber trench for wall cuts through 140.

Fig. 13. Plan of Rue Plinie and Rue Taieb Meniri. Fig. 14. Rue Taieb Meniri, section, east face.

Conclusions.

Block wall 139 is obviously a major foundation. Similar blocks had been recovered from trenching earlier in the summer 30-50m further north along the street. The workmen reported they had found many antiquities in that trench, and it is tempting to think that the wall continues. If so we must surely regard it as either a major Punic public monument or some kind of terracing structure. The yellow mortar of wall 141 which was also founded at a higher level than 139, suggests a Roman date, with its foundation as well as its rebbbing trench cut through 140. Some idea of the level of the first Roman surfaces is given by layers 136-8.

Location. Runs east to west between Ave Bourguiba and the sea just to the north of the Primary School. Our trench was positioned at the west end of the street.

Excavation Strategy. We were able to obtain a fairly full picture of the features in this trench. Although they were complex we were able to spend some time recording them, though we had more time for the west part of the trench than for the east. The German team made a sondage on the south edge of the central part of the trench.

Summary of features. Punic. There were some Punic sherds in the terracing levels cut by the Roman cisterns, but no Punic structures were seen.

Roman. We recorded three Roman cisterns 145, 147 and 170. The east half of the trench was taken up with a massive Roman wall 159/164 that may have formed part of the facade of the Decumanus Maximus to the north of the modern street. Three Late Antique side walls were added to this.

148. Yellow/brown clayey loam. Foundation trench for 147?

Pottery. Second century AD.

150. Shallow lens of grey/brown loam. Above 149, below modern.
151. Orange/brown sandy loam. Above 152, below 150.
152. Wall of limestone blocks running east to west. Set in yellow/white mortar, below 151.
153. Roman wall, 2 courses high cobbles set in yellow/white mortar.

C. Section XI-X2 (Fig. 14) and layers associated with walls 159 & 164.

156. North to south wall 2 courses high. The lower course is a single slab, whilst the upper course is of cobbles set in grey carbon-flecked mortar. 157 Wall in robbing 155 just west of 156.
158. 6 courses high, rubble core set in white mortar.
159. Small tip of grey/orange sand between 157 and 159. Part of 1557 or foundation trench for 159. 159. 3m wide wall running into the trench from the north at a bearing of 90° due east. Constructed of cobblesstone rubble core set in yellow/white mortar, faced on south side with dressed blocks. (Plate 5).
160. Orange/red sandy loam lining cut into west side of wall 159.
161. Yellow/grey sandy fill containing many pebbles. Above 162.
162. Crumbled mortar surface, probably base of robbing of face of wall 159, or foundation work for 164.
163. Orange/red clay. Foundation bedding for wall 164.
164. Widening of wall 159, or later new wall. Constructed of rubble core set in yellow mortar. Above 163, below 161 and 168. Either 159 or 164 turns more towards the north, running up the trench for another 25m.
169. Side wall running north away from wall 164.


Detailed Stratigraphy. (from east to west) (Figs. 5 & 15).

A. 142. Opus signinum floor 60cm below surface of modern road.

B. Section Y3-Y4 (Fig. 14). Layers associated with cisterns 145 & 147.

143. Yellow/brown clayey sand. Below 144.

Pottery. First century or ? early second century AD.

144. Grey/brown loam. Above 143, below 145.
146. Large earth filled disturbance cutting cisterns 145 and 147. Modern?
CONCLUSIONS.

The eastern part of the trench with the two cisterns 165 & 147 cut into the Roman terracing layers 143-4 presents no problems. Further west cistern 170 appears to have been cut, if not completely sealed by the first great wall 159. The foundation of 159 also cut wall 157, though the latter was replaced by wall 156, whose carbonate mortar may place it in the fifth to sixth century. Wall 159 was widened or replaced by wall 164 adjoining which are two more fifth to sixth century side walls 169 to the north and 171 to the south. The total recorded length of walls 159/64 is 30m.

This situation is strikingly similar to that we exposed in Ave 2 march 1934 (above p. wall 37) - a large Roman wall making an elbow-bend to run along our trench. Here, in the centre of the Roman city we cannot explain away the change in direction by reference to a different street grid. On the west side of our trench is the line of Cardo 12 east vaulted drain 172 is within 5m of the supposed central sewer of this Roman street. Some 5m to the north of our site we should meet the Decumanus Maximus, the most important east-west in Roman Carthage. The massive walls 159 and 164 could relate to some form of monumental southern facade for the Decumanus. The presence of three late charcoal mortared walls 156, 169 and 171 shows how even this important central part of the city was subject to degradation in Late Antiquity.

10. RUE DAG HAMMERSKJÖELD,

Location. Runs east to west from the sea to Ave Bourguiba one block to the north of Rue Ibn Chabaa. We worked on the central and western thirds of the street from the junction with Rue Septime Severo to just short of Ave Bourguiba.
Excavation Strategy. This street has provided us with the densest longest uninterrupted succession of features, and is of prime importance for our assessment of the ancient urbanism. The whole team worked on the area, and yet we were always under extreme pressure to move on. In some places we only had time to record the major structures, but we have a complete record of these along the whole trench.

Summary of features. Punic. We examined two late Punic pavements 200 and 215. Some walls 205, 212, and 213 may more uncertainly be attributed to this period.

Roman. A mortar floor 181 at the east end of the trench may be mid-Roman but the majority of later features seemed to be of Late Antique or Byzantine date. They included walls 175, 185, 196/8 and 214. Vault 187 may be the Roman sewer of Cardo 14 east that was later blocked by wall 185.

Fig. 16. Plan of Rue Dag Hammerskjoeld, east trench.

Detailed stratigraphy. (From east to west).

A. Section Y5-Y6 (Figs. 16-7)

173. Large modern disturbance or robber trench.
174. Modern pit or robber trench. Above 175, below modern.
175. Late wall running east to west. Rough-cut cobbles set in earth. Below 174.
176. Robber trench or disturbance? Clearly cut through 177 & 178, but not certain if cut through 175.
177. Brown clay surface. Floor predating or associated with wall 175. Top 6.42m ASL.
178. Red clayey loam, 10% pebbles. Above 179, below modern. Disturbance?
179. Lense of brown sandy loam. Above 180, below 178.
181. Mortar floor surfaced with water-worn pottery sherds. Above 182, below 180. 6.5m ASL.

B. Section Y1-Y2 (Figs. 16-7) Layers associated with wall 185.

185. Late wall of rough hewn cobble stones set in grey charcoal flecked mortar, 3 courses high. 7m long ending against a large Char El Keblir block at west end. Founded at 7.4-7.5m ASL. (Plate 6).
186. Orange/red silty loam containing mudbrick and mortar lenses.

188. Robber trench cutting wall 185. Yellow/Brown sandy loam with cobbles.
189. Fragments of wall foundation in base of disturbance 190. Pebble or cobbles set in yellow mortar.
190. North to south robber trench removing wall 189.

C. Layers to the north of Section Y1-Y2 in Rue Procope. (Fig. 18)

191. Stone Opus africanum block. In situ?
192. Rough mortar floor or bedding. Runs from 191 above 95m further north. Truncated by robber trench.

D. Layers associated with foundation 196/198. (Fig. 18)

193. Im wide mortar floor with stone chippings.
194. Mortar floor with later earthen resurfacing.
195. Wall fragment, cobble set in white plastered mortar. Most of the foundation has been removed by a robbing cutting between 193 and 194.
196. Wall or foundation 2.2m across, constructed of rough heun cobbles set in yellow/white mortar with some charcoal flecks. 50cm below modern ground level. Top 8.53m ASL.

197. Floor or foundation on east edge of 196 consisting of two pink/white mortar layers, each covered by a thin carbonate occupational layer. The upper mortar layer is 20cm thick and 1.1m below modern ground surface.


POTTERY. Mid fifth century AD or later.

203. Shallow slot cutting through mosaic 200.

204. Thin layer of carbonate occupation above mosaic 200. Grey sandy loam 1cm thick.

205. Wall foundation associated with mosaic 200.

Fig. 17. Rue Dag Hammarskjold, east trench, sections of south face.

198. Rough foundation consisting of reused cobble size fragments of mortar stones, and mosaic set in pink/white mortar with some charcoal flecks. Lies up against east edge of 196 and above 197. Top 8.53m ASL.

199. Thin mortar layer, or possibly surface, yellow/white mortar, seals 196 and overlaps 198.

E. Layers associated with Punic pavement 200. (Fig. 18.)

200. Late Punic pavement closely packed large regular ceramic tesserae. 1.1m below modern street level. Associated with wall 205. 8.25 ASL.

201. Wall of roughly squared cobble stone facing, and solid grey charcoal mortar core. Upper portion single stone block below wall 201. May be later than 200 as the latter appeared to dip down when it met 205, and there was no mortar join. Mosaic 200 was also found to run behind 205 block. Further west wall 205 had a core of rough cobbles.


207. Hard orange/yellow mortar with pebble inclusions. Above 208-9, below 206.

208. Layer of hard grey mortar. Beneath wall 205, but separated from it by 206-7.


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F. Features at west end of modern street. (Fig. 18).

211. Wall running east to west along north edge of the trench. Rough cobble stones set in brown clay. Traced for 3m.

212. Wall foundation of 3 large dressed blocks

CONCLUSIONS

The problem in interpreting this trench is to separate the Punic features from those of Roman or even Byzantine date which appear to lie right on top of them. This is best illustrated by Punic mosaic 200 with fifth century AD fill 202 right above it. It would seem from their rough construction that walls 175 and 186 would date from the late Antique or Byzantine period. They lie at 6.4m 8 7.4m ASL.

Of our recorded section we have two very high Punic mosaics 200 and 215 at 8.25m ASL. It is possible to reconcile these levels by hypothesising on the nature of Roman and perhaps Punic terracing. Assuming that walls 175 and 186 are roughly of the same late Antique period then there is a rise of about 1m between them that would be suitable for a terrace. In the western part of the trench some idea of Roman levels can be gained from two cisterns in a house plot on the north-west corner of Rue Dag Hammerskjold and Rue Procope. The floor level above them would have been about 8.5-9.2m ASL. We would then have a drop of 1.5m between these cisterns and wall 186 to the east.

Cardo 13 and 14 east should run through this area. Theoretically they should run beneath wall 186 and over foundation 196/8. We have in fact discovered a possible Roman street sewer 187 that could belong to Cardo 14 east, on the other hand we have no definite street surfaces. Often changes in level or terracing in the Roman city followed the street lines. Our hypothesised eastern terrace fits Cardo 14 east but the theoretical line of Cardo 13 east would leave a cistern at 9m ASL in the same insula as wall 186 at 7.4m. A 1.5m terrace is, of course possible, within an insula but in practical terms seems unlikely. If we envisage Cardo 14 east following its theoretical line and using drain 187, then we have to admit that the street was totally blocked in Late Antique times by wall 185 (a similar complete blocking can be seen on the Canadian site see Ellis forthcoming).

It is significant that we have so many Punic features preserved at such a high level at the west end of the street. The same pattern was found in Rue de la République, and Rue Sophonisbe. Modern disturbance, and perhaps Roman terracing seem to have cut deeper in this area.

11. AVENUE DE LA REPUBLIQUE. (Recorded by Guy Grainger and Megan Butler).

Location. This street runs down from Ave. Bourguiba to the west to the Bey's Palace and the sea on the east. It is one block north of Rue Dag Hammerskjold.

Excavation strategy. The eastern end of the street was recorded early in the season. The western part of the trench was recorded single-handedly by Guy Grainger, who only had time to draw the section and gather a few sherds of the material of the dig.

Summary of features. Punic. Layer 225 probably represents the Punic destruction level.

ROMAN. In the eastern part of the trench we found a mid-Roman mosaic 217, a cistern 216, and the sewer of Cardo 15 east 218.

In the western part of the trench we found a succession of three Roman to Byzantine mosaics. These levels were then covered by typical fifth to seventh century earth floors and an oven 242.

Detailed stratigraphy. (From east to west)

(Fig. 19).

A. 215. Roman cistern built of cobbles in yellow mortar. Top at 5.15m ASL.

217. Mid-Roman mosaic with 40cm thick mortar bedding. The design is a complex border of 1 guilloche, 2 black triangles, 1 guilloche, 4 black diamonds. These run east to west, the whole length of the 4m panel but by the digger. The guilloche includes blue/black, pink, green and yellow tesserae 1cm or less across. (Fig. 20 & Plate 8).

5.0m ASL (voir fig. 20 en couverture)

218. Central sewer of Cardo 15 east. Both walls built of irregular cobbles set in yellow/white mortar, but west wall better constructed. Vault not preserved but top of walls at 6.3m ASL (Plate 9).

B. Section Y1-Y2 (Fig. 20-21).

219. A sequence of two mudbrick floors each covered with thin layers of occupational debris.

Orange/yellow loam, with grey/black silty loam above. Above 220, below modern.

220. Two mudbrick floors and occupation below 219 but unlike 219, floors 220 continue to the west of disturbance 221. Above 222, below 219.


222. Orange/yellow sandy loam. Above mosaic 223, below 220.

223. Mosaic, observed only in section. Above 224, below 222. 7.85m ASL.

224. Grey silty loam immediately below mosaic 223. The thin bedding of 223 may suggest a Byzantine date. Above 225, below 223.

225. Orange/red sandy loam. Probably to be equated with the Punic destruction/Roman terrace deposit. Underlies all the stratigraphy in section Y1-Y2.

226. Pit. Fill of grey silty loam. Above mosaic
Plate 8. Ave. de la République, Roman mosaic

227. below 220.
228. Polychrome mosaic with red, blue, green, white and blue/black tesserae less than 1cm across.
229. Signs of repairs using poor quality tile and chalk tesserae. Laid on 15cm mortar bed over tile floor 230. 7.93m ASL. Above 230, below 229.
230. Small fragment of mosaic, possibly broken away from 227 by pit 226.
233. Two separate fragments of mosaic, set on 10cm thick mortar bedding. Above 225, below 232. East frag. 7.9m ASL. West frag. 8.05m ASL.

POTTERY. Late fifth to sixth century AD (LRom Cook3)
235. Section XI-X2 (continuing section Y1-2 along north baulk - Fig. 21).
236. Irregular earth bonded rubble wall repairing wall 236.
237. Wall with rough hewn cobble face to west and rubble core set in yellow/white mortar.

POTTERY. Only 8 sherds, including second century ARS.
243. Base of oven. Red clay wall and floor, blackened internally. Wall only survives on east side. Floor 8.5m ASL.
244. Tip of red clay and yellow/orange sand inside oven 242. Below 244.
245. Lenses of yellow/orange clay, with granules of grey clay. Above 243, below 245.
CONCLUSIONS

This trench presents a much more consistent picture than Rue Dag Hammarskjöld one block to the south. At the east end of the area we can see cistern 216 & mosaic 217, both at approximately the same level - 50cm ASL. Underlying section Y we saw the typical red clay of the Punic debris that was reused in Roman terracing.
-225. Above this we have a series of 3 - mosaics - 223, 227, 233 - and a tile floor 233/4. Their elevations slowly increase as the rooms progress westwards up the slope. The thin bedding of these mosaics may argue an earlier period.

Whatever the case they are then covered by devolved occupation characteristic of the Vandal and Byzantine (for parallels see the Michigan site Ellis 1960).

12. RUE SEPTIME SEVERE.

Location. This street is a continuation of Rue Taleb Mehiri running north to south two blocks west of the sea and ending in the north at the Park of the Antonine Baths.

Excavation strategy. Before we arrived in the summer of 1986 the trench had already been dug along the street and filled in. However notes taken by archaeologists from Carthage Museum and some photographs taken by Mrs. P. M'Barrak allow us to reconstruct some of the features at the south part of the street, where it meets Ave. de la République. There was a double cistern of the Roman period. The western chamber, cut by the trench is 2-3m square in plan, with an arched entrance to the eastern chamber. It was built of cobble stones set in yellow mortar. To the south there was a large mosaic that ran at least half way across the similar red clay layer lay above the feature in the west baulk. The majority of the layers cut by the trench should run just to the west of this trench, and we should probably expect a drop of about 1m, from the Tangent to the west of it that contained mosaic 217 in Ave. de la République.

At the north end of Rue Septime Sévère we began a hand-dug sondage in 1986. It will be the subject of a separate report. Sufficient to say at present that we have identified the flagged surface and sewer of Caro Byzantine period the street was completely blocked by a large colonnaded-building, whose function is so far unknown.

13. RUE SOPHONISBE. (Recorded by Guy Grainger and Megan Butler).

Location. This street runs from Ave. Bourguiba in the west to the sea at the east one block south of the Park of the Antonine Baths. It is one block to the north of Ave. de la République.

Excavation strategy. This was the first street on which we worked. Its stratigraphy proved to be of a similar type to Rue des Suffêtes. Most of the layers were consistent all along its length. We thus drew representative sections as the pipe-laying permitted, and gave special attention to any major features that interrupted the deposits.

Summary of features. Punic. Before our arrival a few large stuccoed blocks from the fourth century BC. Punic city wall had been pulled out of one part of the trench, though we did not see where they had come from. Two massive 8m wide robber trenches at the east end of the street may also be the remains of Punic city defenses. At the west end of the street we recovered an important deposit of the sixth century BC. ROMAN. We found an exceptionally large sewer 290 for Caro 19 east. Its size reflects the drainage of the Antonine Baths to the north. Two mortar floors, and some disturbances at the west end of the street may also date from the Roman period.

Detailed stratigraphy. (from west to east).

K. Section VI-V2 (Fig. 23) - Layers from the Archaic to Augustan Roman periods.


POTTERY. From this layer about 50cm to the east of the section drawing we recovered a deposit of large sherds dating to the sixth century BC, c. 8.5m ASL.

263. Rim of grey sandy loam. Above 264, below 262.

264. Grey/black sandy loam. Deposited on previous debris? Above 265, below 263.


267. Thin layer of orange/red clay. Above 268, below 266.

268. Grey sandy loam with occasional cobble size stones and mortar. Above 269, below 267.


273. Grey sandy loam with quantities of cobbles. Above 274-5, below 266.

274. Pink sandy loam with lenses of grey/black sandy loam. Above 277, below 272.


276. Rim of grey sandy loam. Within ???.

277. Grey sandy loam with many pebbles. Above 278, below 274.

278. Pink sandy loam with pebbles graded by size into tip lines. Above 279, below 277.

279. Grey sandy loam with many pebbles.

RUE SOPHONISBE west trench

Fig. 23. Plan of Rue Sophonisbe, west trench.

Interpretation.
The section shows a large number of debris tips that appear to have been thrown in from the east. They can be classified into two kinds of tip pinkish sandy clays - 261, 265, 266, 274, 278 - and grey sandy loams - 263, 268, 272, 273, 275, 276, 277, 279. It is probable that we should see this as a Roman terracing deposit, reusing several occupational layers of the Punic period. Since the sixth century BC pottery comes from one of the lowest of these layers - 262 - and consists of large sherds it may have been in situ rather than redeposited, but we cannot be sure. Features 257, 258, and 271 represent a level of disturbance cut into the Punic destruction. They could be modern features, but since they do not relate to any roadworks it may be more likely that they are the bottoms of Roman features. Mosaic 280 is not likely to be in situ, and may have been redeposited by a later cut as well.

5. Other features in western part of trench. (Fig. 23).
281. Stone block standing upright in south baulk of trench 4m west of section Y. Top at 9.1m ASL.
282. Roman cistern. Two walls 1.2m apart running north-south. Cobble stones set in yellow/white mortar. Vault missing, top of walls 9.55m ASL.
283. Thin mortar floor 2m wide c.15cm thick. 7.91m ASL.
284. Thin mortar floor 2m wide c.15cm thick. 7.9m ASL. 2.6m east of 283.

C. Layers at the east end of the modern street. (Fig. 25 & 26).
As at the west of the street, most of the stratigraphy consisted of Roman terracing deposit. We will therefore take a representative section, and major features that interrupted this.
286. Orange/red sandy clay containing quantities of pebble to cobble size stones and mortar.
287. Grey sandy loam with rather less inclusions than 286.

POTTERY AD 120-180, including ARS 9A, A amphora Afr Piccolo.
288. Compacted yellow sand with some pebbles. Natural? c. 1.75m ASL.
289. Massive robber trench running north to south across trench. 8m wide. Base at c. 1.5m ASL.
290. Masonry vault constructed of irregular cobbles set in yellow mortar. Sewer of Cardo 19 east 2.10m high, and 1.78m wide. Base at - 0.50m ASL and roof at 2.7m ASL. Interior fill of black loam including modern polythene bags! (Plate 10).
291. Pit cut into 285. Fill of brown sandy loam with lenses of orange/red sandy clay.
292. Grey/black loam with granule carbon and mortar. Above 293, below 286.
293. Thin lens of mortary debris. Above 294, below 291.

POTTERY. (from layers 292-4) Mixed from Punic to third century AD (ARS 238).
295. Clean grey sand. Natural? Below 294. 0.75m ASL.
296. Massive robber trench 7.5m wide. Base at 0.82m ASL. Fill composed of 285 with tips of yellow sand on its east edge.

Fig. 28. Plan of Rue Sophonisbe, east trench.

CONCLUSIONS

We were able to follow the whole of this trench from the sea to just short of Ave. Bourguiba, except for a short stretch between Rue Septime Sèvère and Rue Procope. The whole stratigraphy is very similar consisting of large tips of red clay and grey loam which we have interpreted as Punic destruction/Roman terracing. From the base of this tip at the west end of the street we recovered the Punic Archaic deposit 262 at c. 8.5m ASL. At the east end of the trench near the sea we reach natural sand at 0.75m and 1.75m ASL with little or no intervening occupation, creating a slope of line 60 up to the west. It is difficult to explain the two parallel massive 8m wide disturbance 289 and 296. One possibility is that they could mark the location of the city wall towards the sea. The original fourth century BC line as established on the German site should run some 15m to the west of 289, but might have turned east to follow the contour of the coast. Alternatively we may envisage a later extension that took in a newly consolidated area as on the German site (Rakob 1984). Some blocks with architectural mouldings in stucco were recovered from the trench near Rue Septime Sèvère, before our arrival in Carthage. They are very similar to those used in the city walls on the German site, and found in redeposited contexts on the British harbour sites and on the house plot of Rue Dag Hammerskjold/Procope. It is hoped to test the original line of the Archaic Punic city wall in the house plot at the north end of Rue Septime Sèvère, and then a full report will be made.

At the east end of the street we found pottery of the second to third centuries AD in layers (287, and 294) of the Roman terracing around Roman sewer 290. This sewer 2.10m high by 1.78m wide is exceptionally large for one running along a cardo. It is clear that it must have been a major drain from the city emptying out into the sea to the south. The main reason for its size was that it ran from the Antonine

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Fig. 18. Rue Sophonisbe, east trench, sections of south face.

Baths.

Construction of this drain in the late second or early third century then becomes explicable, since the Baths themselves were built in the later second century on the initiative of Antoninus Pius following a fire (Hist. Aug. Pius IX, 1-2), that must have cleared several parts of the area for rebuilding. We have found pottery of the second century in other Roman terracing levels -113, 143;

14. RUE AUGUSTIN. (Recorded by Gary Evans and Simon Ellis)

Location. This is the only street that we recorded to the west of the TCM train track. It is located immediately behind the Hannibal station of the TCM railway, and runs north-south.

Excavation Strategy. We were able to obtain a very full record of the trench. At the south end most of the ancient stratigraphy lay at the bottom of the trench. In the centre we cut through the Punic destruction whilst in the north part of the street much of the lower part of the cut was through yellow sand that may be natural, and was certainly without ancient layers or finds.

Summary of features. PUNIC. We identified a late Punic wall 291, and several nearby occupational layers.

ROMAN. In the central part of the trench we were able to reconstruct the plan of a line of at least seven rooms. To the south we recorded the surface and south facing 9 east. Further south again was a late Antique mosaic 300 with a geometric design. Also recorded were a Byzantine tomb, a Late Antique cistern, and a flagged floor.

Detailed stratigraphy. (from south to north)

297. Brown sandy loam. 20% sand to granule mortar, above 301, below 297.
300. Geometric monochrome mosaic. An area 3.5m X 0.5m was uncovered by cutting back the baulk.
301. Thin layer of granular mortar. Above 305, below 300.
304. Thin layer of granular mortar. Above 305, below 303.
Interpretation. This section is a neat cross-section of Byzantine Carthage. First mosaic 300, like mosaic 80, a geometric design on a thin bedding characteristic of the Byzantine period. Above this we have a mortar floor 302, above a clay bedding 301, that is characteristic of later Byzantine occupation in the city.

8. 304. Thick hard mortar surface consisting of 50° cobble stones set in yellow/white mortar. 4m wide, top at 17.78m ASL. (Plate 9 east).  
80. Byzantine tomb. Walls built of stone slabs, as well as roof. (Plate 11). Above roof a crushed amphora. Top at 18.10m ASL. Cut from below modern.  

POTTERY. Crushed amphora is LRom Amph 1 of fifth century, in addition a possible sherd of LRom Cook Ware IV.  
C. Section of central part of street. (Fig. 29, Plate 12).  
This section consists of the Roman terracing levels within two rooms. These rooms were presumably flanked to the west by wall 347 just beyond the section. Below the Roman levels some Punic features were identified (312-315, 341).
311. Robber trench marking south end of section. Above 312, below modern.
312. Yellow/white sand, 20% pebble stones. Above 314, below 311, 313.
313. Disturbance or installation. Fill of brown sandy loam, and some pebbles. Above 312, below modern.
315. Orange sand, 20% pebbles. Above 316, 320, 326, 331, below 314.

POTTERY. 3 sherds, 1 Late Punic, 2 unknown.

316. Orange sand, 10% granule stones. Below 315, 317.

POTTERY. ARS 10A. Second century AD.
318. Lense of red clay in surface 314.
319. Red sandy clay, 10% pebbles, 10% granule mortar. Above 320, 340, below 314.
321. Disturbance or installation. Fill of brown sandy loam, and some pebbles. Above 314, below modern.
322. Disturbance cutting centre of room. Fill is dark brown loam like subsoil over 312 & 314.
323. Roman wall between southern and central rooms of section. 8-10 courses high. Mostly Ghar el Kebr cobbles in white mortar.
325. Yellow sandy mortar. Above 326, below 326.
326. Red/brown sandy clay, 30% granule mortar, 20% granule carbon. Above 315, below 325.
328. White mortar debris, 30% pebbles. Above 329, below 324.
329. Sandy loam, 20% pebbles. Above 315, below 328.
330. Lense of white crumbly mortar. Above 324, below 327.

Plate 18. Rue Augustin, main section

332. Yellow mortar surface. Above 333, below 311.
333. White mortar surface. Above 334, below 332.
334. Red clay containing two tips of carbonate occupational debris. Above 335, below 333.
335. White mortar surface. Above 336, below 334.
337. Large modern disturbance. Uncertain nature Brown sandy loam, 50% cobbles.
338. North wall of central room. 6 courses mostly Ghar el Kebr cobbles set in white mortar.
340. Orange sand, 20% pebble to cobbles stones. Above 334, below 319.
341. Punic wall two courses of roughly hewn cobbles. Runs at bearing of 70° top at 17.8m ASL.

Fig. 18. Rue Augustin, section of central street, west face.

Interpretation. The detailed composition of the Roman terracing deposits is clear from this section. Pits 313 and 321 are cut to a similar depth, have similar fills and are both cut from below modern layers. They should represent some form of installation within the room and contemporary with its occupation. Below the Roman terracing we have the Punic wall on a different alignment to the Roman street-grid, and on the same level as mortar surfaces 332-3 and 335.

D. Features at the north end of the street.
343. Thin plaster surface level with top of cistern 342 on south side.
344. Flanged floor 2.6m wide. Flags about 30cm long. 18.10m ASL.
345. Roman wall crossing trench east to west, and then turning down the trench towards the north. Cobbles set in yellow mortar.

346. Mortar floor cobbles set in white mortar. 17.62m ASL. Flanked on south side by wall of similar construction to floor.
347. Fragment of wall running north-into west baulk of trench. Continuation of 345. Continuing north to flank rooms in centre of trench. Built of Hamilcar cobbles set in white mortar. Mortar has charcoal flecks in lowest courses. Top 18.80m ASL.
CONCLUSIONS.

The stratigraphy of Rue Augustin tips downwards towards the south. The lower walls of cistern 342 are set in yellow sand which strongly resembles the supposed natural sand and recorded at the east end of Rue Sophonisba. Punic wall 341 is of major importance as evidence of buildings on the east edge of the Hill of Juno, and their orientation. Unfortunately we were unable to date it properly. A modern disturbance cut not far above it, and it lay right at the bottom of the trench.

The floors 332-3 and 335 which we would associate loosely with 341 demonstrate that the structures here were probably part of the city not funerary chambers. They presumably date from the fourth to third century BC.

Mosaic 300 at 18m ASL in at roughly the same height as wall 341. We can reconstruct the area of the room here as we have signs of the mosaic border, and robber trenches on all but the east side which is hidden beneath the baulk of the trench. The east side of the room is given by the line of Cardo 9 east. Mortar surface 309 is probably the surface of the street. A neat east edge to 309, running obliquely to the side of the trench, may be identified as the west side of the central street drain.

To the north of Cardo surface 309 the east-west street Decumanus 2 north should cross the trench but we could find no trace of it. However the Roman buildings to the north are at 1m higher elevation than mosaic 300 in the insula to the south east. The fortunate cut of the modern trench has allowed us to reconstruct a line of at least seven rooms in this higher northern insula.

The southernmost two-three rooms probably opened directly onto Cardo 9 east to the west of our trench. 90m further to the north cistern 342 and flagged floor 344 indicate that roughly the same floor level was being maintained though the natural ground level was, as we have said, rising.

From the Late Antique period we have mosaic 300, tomb 310, and probably cistern 342. The latter reuses many dressed blocks, whereas earlier Roman cisterns tend to use cobble masonry. As evidence of the late date for mosaic 300 we mention its monochrome geometric pattern and its thin bedding. The surface above it 302 may be seventh century. This is also the most likely date for tomb 310 (even though the amphora sherds above are fifth century). The tomb is located just on the north edge of Decumanus 2 north. Finally we may note that wall 344 may have been repaired in Late Antiquity as its lower courses were found to be of carbon flecked mortar.

15. THE TWO RESERVOIRS.

During the course of the project we watched the excavation of large trenches for two reservoirs connected with the sewers. One was on the beach just to the south of the Antonine Baths where Decumanus 2 north meets the sea coast. The second reservoir was dug on the north side of the Circular Harbour at the south end of Rue Mohamed Bejaoui.

The Baths Reservoir.

The site of the excavation was about 20 X 20m in plan and was cut 4.5m deep to a depth of 2.65m below sea level. The upper fill was c. 1m below sea level consisted of pebbly grey/brown sand. It contained large quantities of pottery dating from the second to third centuries AD. Below this was a 1.5m thick layer of dark blue/brown sand, containing some stones and pot similar to that from the layer above. The bottom 50cm of the excavation consisted of clean light brown sand which appeared to be natural.

None of the layers produced any sign of structural elements, pieces of masonry, or dressed stones, either in the excavation itself or in the spoil heap of sand removed from the trench. Some of the pottery was water-worn, but most of it had sharp edges, and so had not simply been washed onto the beach by the tide. As well as the pottery there were several large pieces of wood with rounded form, rather than planking.

There was thus no sign of the expected insula in this area to the east of Cardo 20 east, which has been associated with a line of masonry in the sea to the east of the trench that would mark the edge of Cardo 21 east.

However to the north there was clearly an insula which contained the remains of the eastern edge of the Antonine Baths. It is possible that the south insula where the reservoir is located was a late development of the city in the mid-late Roman period, but it is still puzzling why the upper layers of the fill did not contain any elements of masonry.

The Circular Harbour Reservoir.

This was rather smaller than that at the baths, only 10 X 10m in plan. It stopped at c. 1m below sea level when it hit natural bedrock that consisted of yellow sandy clay containing many limestone cobbles. Just above this was a layer of dark sandy loam containing large quantities of Punic pottery. The upper part of the excavation was not observed, but some features could be seen behind the shuttering.

On the north side of the trench at 1m below the modern ground there was a heavy flagged floor 4m wide. On the east side of the trench two white mortared cobble walls were recorded running east to west. The first was located 0.9m south of the northeast corner of the trench and the second was located 2m further south. The floor and walls presumably formed part of the Roman harbour facilities.

BIBLIOGRAPHY.


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NOTE SUR UN CHAPITEAU IONIQUE DE CARTHAGE.

En 1986 a été fortuitement découvert à Carthage un beau chapiteau ionique (1). Sculpté dans un marbre jaune rosé, il mesure environ 40cm de haut (2). Il est solidaire d’un collier et comporte deux faces à volutes et deux balustres.

Le collier est orné de feuilles d’acanthe de deux types, qui sont assez simplifiées. Certaines sont figurées en entier; de part et d’autre d’une large nervure axiale dont la surface est plate, se répartissent des lobes latéraux divisés en folioles au modèle qui se voudrait épineux. Chaque lobe est séparé du voisin non par un œil à proprement parler, mais plutôt par une échancreuse plus ou moins triangulaire. Entre ces larges feuilles principales, en sont intercalées d’autres dont seule la partie médiane est apparente. Pour ces dernières la nervure centrale reçoit un traitement différent: au lieu d’être plate, elle est en effet de section triangulaire et la pointe supérieure présente quelques découpures arrondies; en outre, le limbe de ces folioles est charnu et même légèrement bombé, au lieu d’être reçu comme c’est le cas pour les premières.

Un astragale sert de transition avec le chapiteau proprement dit. Il est orné de perles en ovale formé de deux arcs de cercle sécants, et de deux pirouettes losangiques assez épaisse. Cette file d’ornements est parcourue en son axe longitudinal par une arête très marquée. Le chapiteau comporte une échine sur laquelle viennent se greffer deux volutes qui présentent la particularité de ne pas être reliées l’une à l’autre par un canel. Elles-mêmes sont formées d’un canal concave étroit, bordé par un filet plat de même largeur, ou plus épais encore, ce qui rappelle nettement le tracé dit en serpentini. Notons par ailleurs l’absence d’œil constitue. L’échine s’orne d’un seul ove complet, encadré par deux points de flèche suivies, au contact avec les volutes, par une demi-coquille. Ces coquilles sont larges et parcourues de dépression longitudinale profilée en V. L’apex de la coquille médiane est recoupé par la moulure inférieure. Les pointes de flèche sont schématisées.

L’écoinçon normalement compris entre échine, canal et volutes devrait en principe être subdivisé par une palmette descendante; ici, le rôle en est joué par le début du ruban de la volute, qui s’élargit légèrement et amorce un mouvement descendant vers l’axe du bloc. Cette omission est courante dans le répertoire africain.
La problématique du sujet aurait alors à aborder un certain nombre de points:
- celui de la typologie des chapiteaux ioniques en Afrique Proconsulaire;
- celui de la répartition géographique de ces types, et par conséquent, des ateliers;
- celui de leurs sources, et en particulier de celles auxquelles puisse le chapiteau de Carthage;
- celui de leur confrontation mutuelle et des comparaisons avec les autres formes en usage à travers l'Empire;
- celui de la présence même de notre chapiteau à Carthage;

Cette liste n'est d'ailleurs pas exhaustive et nous aurons à y revenir.
Quoi qu'il en soit, le prestige de Carthage et celui du marbre de Numidie nous ont donné l'occasion d'aborder brièvement un sujet particulièrement riche à propos d'un exemple découvert dans la métropole provinciale.

Notes

(1) C'est à la générosité de Monsieur A. Ennablé que nous devons de pouvoir étudier cette pièce.
(2) H. totale (sans le coussinet surabaque): en vinron 39cm; h. du coussinet: 1 à 1,5cm; côté du coussinet: 54 x 54cm env. Face à volutes: env. 77cm; balustres: 66,5cm; h. totale du collier: (avec les perles) 25cm; h. échine d'oves: 13cm; h. des volutes: 19cm d'un coté, 20,5cm de l'autre; largeur d'une volute: 20cm; diamètre: cm. Ces chiffres sont donnés à titre indicatif, car les surfaces ne sont pas ravalées avec soin et souvent irrégulières.
En outre, nous n'avons pas jugé nécessaire de faire un relevé graphique du chapiteau, car la facture est assez négliée de sorte qu'elle oblitère toute analyse fine des proportions.
(3) Voir notre thèse de 3e cycle (Paris 1972) pour l'étude des ornements; il n'y a pas lieu de repren dre ici la démonstration en détail.
(5) Que nous préparons dans un autre cadre. L'évolution antérieure a été examinée dans notre thèse d'état.
(6) A. Lézine, Carthage, "Vue (Paris 1968), p. 165; fig. 4; P. Pensabene, 
(7) N. Harrazi, "Mémoire de la princesse de Kairouan, Tunis, 1982, p. 36 n°3."

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