SIXTH-CENTURY FORTIFICATIONS IN BYZANTINE AFRICA

An Archaeological and Historical Study

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GAZETTEER AA.

SITES AT WHICH OFFICIAL SIXTH-CENTURY FORTIFICATIONS ARE ATTESTED BY DOCUMENTARY AND/OR EPIGRAPHIC EVIDENCE.

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Gaz. AA. Carthago lustiniana (cont.)

some of the gates, however, were apparently still intact (Procopius, III, 18, 10; 20, 1; 21, 11-13). The harbour (Mandracium), situated inside the walls, was defended by a chain drawn across its mouth (Pro-copius, III, 20, 2-3; 14-15; de Aed., 5> !!) Belisarius's programme of restoration comprised three operations: a ditch was dug around the circuit walls, where formerly there had been none (see below, however); a stockade of closely packed stakes was built along it; and, finally, repairs were made to the wall itself. It is uncertain precisely what purpose the stakes served. Possibly they were only a temporary measure, designed to close up the breaches in the wall; alternatively, they may have served as a TtpoTeCxtovia defending the inner edge of the ditch, or as a chevaux de frise within it (cf. Ch. IV, 2: 253). Beli-sarius paid large sums of money to the masons and general workmen of Carthage and was thus able to have the work completed by the end of December 533 (Procopius, III, 23, 19-20; IV, 1, 7; 1> 12; de Aed., 5, 8).
According to Theophanes, when the Byzantine relief expedition
reached Carthage in 697 j the port was still defended by a chain. The following year, when the Arabs appeared for the second time before the city, its defences consisted of some weak ramparts of earth. The
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Theodosian walls had probably been slighted by Hassan ibn Nu man in 697, as the sources seem to suggest (see Ch. II. 8:107-10^; these earthen defences may therefore have been an emergency measure, hastily imple-mented by the Byzantine army during the winter of 697-698 (Theophanes, a. 6190).
Another fortified work at Carthage dating from the Byzantine period was the monastery built close to the harbour of Mandracium inside the city walls by the prefect Solomon. In 545» Areobindus, together with his wife and sister, took refuge within its walls; and the bishop and chronicler Victor Tonnennensis was later imprisoned there (Procopius, IV, 26, 17; de Aed., 5> 11; Victor Tonnennensis, a,. 555> 2).
Apart from accounts of the fall of Carthage to the Arabs in 698,
the site receives little attention from Arab topographers before the eleventh century. Ninth- and tenth-century geographers tend either to pass over the site altogether or to equate it with Tunis (eg. Ibn

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Gaz. AA. Carthago lustiniana (cont.)

... et remises en etat par Be'lisaire 1 (_3_1, 19) In fact, traces of walls possibly belonging to the Theodosian defences had been found before 1951> but their dates and even their precise positions are not always clear from the published accounts of them.
An observed or presumed trace of walling has been known for
more than a century. It leaves the coast just north of the Bordj el-Djedid fort, runs westward along the northern edge of the high ground, turns south to enclose the La Malga cistern complex, the amphitheatre and circus and reaches the sea again somewhere east of el-Kram, near to the southern entrance to the 'merchant' port. This line of fortifica-tion is shown, with minor variations, as'Theodosian1 on maps of late Roman Carthage (17, fig. 1; 26; 37» pi. 1; cf. _8), and either with no date at all or as 'Punic1 on others (_1; _2, pi. 2; 16, pi. 3> 19> pi. l). Excavations carried out during the past five years have con-firmed that the Theodosian wall did indeed follow a general course of this kind, though the information at present available is still insuf-ficient to allov/ its course to be plotted with detailed accuracy or for the layout of its gates and towers to be known. The land wall would probably have been related to a system of fortification along the sea front, exploration of which is hampered by the effects of coastal erosion (cf. _6; 7.) Here, however, we are only concerned with the landward defences.

According to Carton, the northern end of the wall, where it met
the sea, was defended by a tower and maritime postern gate (_6, 306-319? _7, 55? fig- l); these are marked 'Tour et poterne 1 on the archaeolog-ical map of 1897 (4)• The northern sector of the wall, which is the most distinct part of it to be seen above ground, is defined by a flat ridge, scarped on the north and known as Teurf el-Sour (^, 80-81;]_ 9 501-502; 19, pi. 1, nos. 110-111). A stretch of this ridge, 150 m. long, near to the Damous el-Karita, was cleared in 1923. Poinssot and Lantier state in their report that the excavations revealed a wall, 5 m. thick, built of hard-packed earth divided into layers, 0.40 m. thick, by thick courses of ash and clay. A rubble-built 'bastion 1 (18 m. wide, 3.25 m. high and 2.0 m. thick) flanked the western end of

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Gaz. AA. Carthago lustiniana (cont.)

the excavated sector; and another was found (dimensions unstated) some 30 m. south of the Ste-Monique station of the T.G.M. A cemented walk-way ran along the top of the supposed rampart, which the excavators
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proposed to identify as the earthen ramparts of Mu allaca, erected by Muhriz ibn al-Ziyad in the eleventh century and recorded by al-Idrisi (27; 32, 309-311).
This identification has now been shown to be untenable. Examin-
ation of this area in 1974 led to the discovery, at the foot of the scarp, of traces of walling, 2.10 m. wide, built in grey charcoal-flecked masonry and lacking a facing on the north. The similarity of the masonry with sections of the Theodosian wall identified elsewhere (see below) prompted Hurst to suggest that the supposed earthen ramparts had been no more than a series of deposits that had accumulated up against the inner face of the wall and had become exposed when it had subsequently been robbed out (21, 37). Confirmation of this theory was provided by excavations undertaken by a Canadian team in 1976 on the line of the scarp where it forms a re-entrant between the Odeo.n and the Damous el-Karita. Here the wall was represented by a robber trench, about 2.5 m. wide, filled with loose material including charcoal-flecked mortar and some Islamic pottery. The wall had been built against the outer wall of a fourth-century house, which fronted Decumanus VI. The house was occupied in some form or other until the seventh century, when it was finally abandoned (38).
Some 100 m. to the west of this, the line of the wall crossed the
Cardo Maximus, represented today more or less by the avenue St.-Augustine. On the east side of the road at this point there stands a large amorphous lump of masonry, its facing robbed. It seems likely that this once formed part of a gate, though excavations carried out around it by an Italian team (director prof. A. Carandini) in 1975 revealed that the related stratification had been disturbed too much by stone robbers for any sense to be made of its plan. Further excavations by the Italians on the scarp to the south-west of the supposed gate succeeded in locating the wall and also demonstrated that in this area it was not preceded by a ditch. Presumably no ditch was necessary on account of the sloping terrain. Another lump of charcoal-flecked masonry protrudes from the

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Gaz. AA. Carthago lustiniana (cont.)

base of the scarp where it is crossed by the La Malga - Amilcar road (boulevard de P. Roosevelt)(_21, 38).
Around La Malga, a number of masonry structures, now mostly des-troyed, have on the past been suggested as having once formed part of the city wall (19> pi. 1> nos. 77-78; 35» 152). Lelattre asserts that the city wall formed the north-eastern and north-western boundaries of a property called Bamous-Bamouts (ll, 258; cf. _4). If true, how-ever, it would have enclosed the second-century 'Cemetery of the Offi-cials'. Another structure, possible a gateway or triumphal arch, whose remains consisted of three massive pillars, built 12-13 m. square and faced with ashlar, once stood just north of the amphitheatre (11, 259)5 and on a piece of land called Ard-Souiria, next to the aqueduct as it approaches La Malga (cf. _4), Delattre observed a circular or semi-circular tower, 'dont le mur [etaitj construit avec des materiaux de toute sorte noyes dans un mortier compose de cendres, de charbon et de coquillages brules mesurant 1 ,80 d'epaisseur' (ll, 2595 Delattre adds that this was not the tower observed by Beule above the La Malga cis-terns, cf. ^3, 47-48; JL, no. LXXVIl). On the analogy of Lepcis Magna, where the Justinianic reconstruction is differentiated from earlier masonry above all on account of its 'powerful lime mortar consisting mainly of crushed sea shells' (Goodchild and Ward-perkins 1953? 555 cf. Ch. IV. 2:25#-2S1?), it would be tempting to identify this with part of the reconstruction carried out by Belisarius.
It would seem likely that, for strategic and tactical reasons, the
La Malga cistern complex was enclosed by the Theodosian walls (cf. Pro-copius, IV, 1, 2). It also seems probable that the Porta Fornitana, or Furnitana, refered to by Victor Vitensis, stood where the Lecumanus Maximus crossed the line of the walls. Fragments of a marble inscrip-tion, apparently referring to Theodosius II, have been found in the region of La Malga (GIL, 24564):

(a) Honorio et Theodjosio . pp . aug[g ...
. . . Jpcia[...

(b) ...] cesaci [... (c)
uu[

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Gaz. AA. Carthago lustiniana (cont.)

In view of the monumental nature of the inscription, with letters 12 cm. high, it does not seem impossible that it was once associated with a gate; and if this were to have been the case, it would suggest that construction of the walls of Carthage was begun before the death of Honorius in August 423. However, the restoration of Honorius's name in the text, though quite plausible (cf. GIL, 1358; 24104; 2583?), remains hypothetical.
The circus (which was still in use in 538 (Procopius IV, 18, 11;
cf. 14> 3l)) and the amphitheatre would probably have been enclosed by the walls for the same tactical reasons as the cisterns. A geophysical survey, undertaken by a Polish team in 1972, detected a wall, some 5 m » wide, running parallel to the south wall of the circus at a distance of some 26 m. from it. In the region of the carceres, at the circus's west end, it turned north-west towards the amphitheatre. The fact that the wall was not traced along the eastern part of the circus also suggests that it may have turned south-east towards Douar ech-Chott half way along it (24; 25).
Near to Douar ech-Chott (cf. JL9, pi. 1, nos. 75-?6), Beule' records
a wall, which the local inhabitants had excavated for building-stone, leaving an open robber-trench, 4 m. wide (_3, 80; cf. _2, 155-156). Poinssot and Lantier, misreading Beule's description, mistakenly iden-tified this as a continuation of their own supposed earthen rampart (32, 308-309). Delattre also refers to a mass of ruins at el-Ksar, just south of the Byrsa, from which the locals extracted large blocks of stone by the thousand; but the wall that he says ran south-west from the Byrsa is more likely to have been a terrace wall, forming part of the Roman street grid (10, 84-85).
Carton describes the trace of the wall in the area south-west of
Douar ech-Chott as defined by a low ridge, formed for the most part, he suggests somewhat unconvincingly, by rubbish that had been tipped from the parapet; it was flanked to the north-west by a strong-point, situ-ated on the knoll known as Koudiat el-Heurma, and in the south-east by a similar fortification at Koudiat el-Hobsia (_7, 38). No trace of any wall was found when the cutting for the electric railway was made in 1907 (£3). On the east side of the railway line, however, on a piece

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Gaz. AA. Carthago lustiniana (cont.)

of open land just north of the Salammb$ railway station and flanked to the east by the avenue Habib Bourguiba, excavations by a British team from 1974 have uncovered a 32.5 m. length of the Theodosian wall.
As in the Canadian sector, the wall was found to be built against
the outer walls of domestic buildings, dating in this case from the third to fifth centuries. It was 3.60 m. thick and built with a core of grey charcoal-flecked mortared rubble and a facing of large ashlar blocks. As in the roughly contemporary walls of Sitifis, the core was consolidated with cross-walls compartmenting the fill (see Ch. IV. 2; 265). The area just inside the walls was occupied as late as 1 the seventh century and possibly later. The only direct dating evidence recovered from the wall itself was a marble head used in its rubble core, which provides a terminus post quern of the late fourth century.
In 1975-76, an attempt was made to investigate the wall's outer defences, by opening up a trench 5 m - wide extending 31 m. south from its face. Evidence for two successive ditches was recovered, though the dating remains tentative. The first, which the excavators regard as contem-porary with the wall itself, was at least 10 m. wide and was excavated to a depth of 2.0 m.; it was separated from the wall by a berm, 2.50 m. wide. The width of the later ditch is uncertain, but would seem to have been at least 16.50 m. with a berm of 12.50 m.; it, too, has only been excavated to a depth of 2.0 m., and its inner profile makes an angle of 45° with the horizontal (see Ch. IV. 4:284)(21; 22).
It has been suggested that Koudiat el-Hobsia, in part at least an artificial mound, was the site of the fortified monastery founded by Solomon in the sixth century and described as a castle and ribat by al-Bakri in the eleventh (_!, no. XV; _6, 37-38; 19, pi. 1, no. 74; .33, 221 n.2). Carton records that when a well was sunk from the edge of the plateau, a wall of ashlar, l.bO m. thick and standing to a height of 5 m., was encountered at a depth of 9 m « (j>j 39~40). Prom the work-men Carton learned that the wall's foundation consisted of thick rubble masonry, which was extremely hard (_6, 39 n.l). Although Carton himself identified this as a Punic tower forming part of the enceinte, his des-cription would seem more apposite for a Roman or Byzantine structure. Where the enceinte rejoins the sea remains a mystery. Carton found

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Gaz. AA, Carthago lustiniana (cont.)

some ashlar walling in front of a modern villa (Villa Azerm, marKed Has el-Bey on _4) near the entrance to the 'merchant 1 port; but this appears to have been Punic (_7, 36-37).
Other walls, some of which have been ascribed to the late Roman
or Byzantine periods, have been found on the Byrsa. In 1893? Delattre claimed to have found the wall of Theodosius II on the south-west slope of the hill. Indeed, from his description it appears likely that this was a late Roman, Vandal (?), Byzantine or even Muslim defensive wall. An 80 m. length was uncovered. It was 4«25 ni. thick, attaining 4«50 m» in places, and was built with two faces of ashlar blocks enclosing a fill of rubble masonry or simply earth. Bundled into the masonry were cornice fragments, columns and bases, fragments of statuary and Latin inscriptions (12, 100-101; 13, 57-59). This wall apparently had nothing to do with another which Delattre had earlier attributed to Theodosius (10, 83-86), or to the double, or possible treble, line of Roman terrace walls which surround the top of the Byrsa, forming an artificial rectangular plateau (31» 34; cf. 28; 29)» Traces of late antique or medieval walling have also been found on various parts of the Byrsa Q, 13-15; 12, 31-33; M, 179-180).
An inscription found on the shore of the Lake of Tunis in 1905 has also been taken to attest the existence of a late Roman or Byzantine work of fortification in this region (14; .2, 10). Delattre and Mon-ceaux write of it, 'Ce bloc de marbre paralt avoir ete encastre dans le mur d'une forteresse, probablement dans une tour 1 (_14). The crudeness of the lettering, the shape of the stone (0.64 * 0.25 x 0.10 m.) and the text itself, however, oppose this interpretation. It reads:

+ Gum I)(e)o factum est
omnia et sine D(e)o nic(h)il
factum est; ista in tur(r)i
D(o)m(i)n(i) quet (= quiebit) cui Bonifatiu(s) in-
+ bidet.

The first part of the text is taken from John's Gospel (l, 3): 'All things were made by Him; and without Him was not anything made (that was made)'. The second part seems to mean, 'She whom Boniface regards with ill will (or envy) rests in the house of the Lord'. The word turris is used in a similar sense (AV: 'palace') in a late fourth- to

340.

Gaz. AA.

AMMAEDKA

Haidra (8U 27'E 35^34'N) Town wall

Procopius records that the town of 'Afi£6apa was fortified by Justinian; and both he and George of Cyprus, who refers to it as Kdorpa 'A|4i£6epa, record it as being in Numidia. A military tombstone of the Byzantine period, refering to an optio, Maurianus, was found in Basilica I; and a bishop of the town, Melleus, who is recorded in 568/569> was bul>i e d. in the same church in Indiction XII (for the sixth-century Christian archaeology, see references in £, 74-75; 12).
The Byzantine citadel is situated at the centre of the Roman town,
and occupies a position of some strategic importance at the junction between the main road from Carthage to Theueste and another from GiIlium and Thelepte, which crosses the Oued Sarrath (or 0. Ha'idra) at this point.
The wall encloses an area which slopes southward from the Carthage-Theueste road to the Oued Sarrath, this constituting its only natural line of defence. Its shape is that of a quadrilateral; but while its north and south walls are straight, the east and west ones are built erratically to make best 'use of the sloping terrain. Overall its measurements are about 125 x 195 m »> enclosing an area of some 2.55 ha. The wall is among the best preserved in Africa, surviving in places to 7 or 8 m. in height. The north wall and its towers, however, represent a refortification of the Turkish period, though the curtain and the square interval tower possibly rest on Byzantine foundations. The south wall was consolidated in about 1930, and Tower _d more recently. The masonry includes a great quantity of reused material: inscrip-tions, tomb stones and architectural fragments. It consists of a rubble core, faced inside and out with large ashlar blocks. On the south side, the vertical divisions between the sections of wall built by different working parties are clearly visible.
The road from Carthage enters the walled area through a gateway in
the north-east corner, between Towers _a and _b (PI. lib). The gate itself had collapsed, except for three voussoirs on the north side, before being blocked, probably by the Turks. The towers flanking it

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Gaz. AA. Ammaedara (cont.)

measure about 11.5 m » across, and project some 10 m. Tower _a is built on the footings of an earlier structure. A pair of corbels, about
35 x 35 cm « i n section and 60 cm. apart, project from the side of it which faces the roadway. One of them has foliate decoration, while the other is mutilated. The absence of any opening in the tower asso-ciated with these suggests that they had no military function, but served possibly to carry a monumental frieze or inscription. It seems very likely that the road from Carthage continued through the walled enclosure and left for Theueste through another gateway situated between Tower h and a now demolished tower to the north of it. The southern entrance to the citadel was defended instead by a gate-tower (_d), which has recently been restored. This is open-gorge with the upper part carried on a barrel-vault. The gate, about 2.5 m. wide, is covered
by a lintel and relieving arch. A small postern gate, about 1.70 m. wide, situated just north of Tower _c represents the fourth entrance;
it too has a lintel with relieving arch (PI. Illa-'b)
Five other towers complete the defences. They are all rectangular except for Tower _c, which is circular and placed almost tangentally to the wall. The spacing between them varies from 53> 57 and 60 m. on the west, to 70 and 70 m. on the east; while the south wall which is protected by the oued has no interval tower for the whole of its 100 m. length. A parapet-walk most likely encompassed the whole circuit. Along the east wall and at the south end of the west wall this was carried on arcades (PI. Illb). The only surviving stair up to it is in the south-west corner.

The most conspicuous of the internal structures at Ammaedara is
the Byzantine church (11; 12). However, there is nothing to support Diehl's assertion that, apart from the church, the buildings inside the walls were exclusively military in character, since, again excepting the church which may well be a garrison church, they have never oeen investigated systematically. Until large-scale excavations are under-taken, it will not be possible to say whether the citadel was intended exclusively for military occupation or whether it was divided into a civilian and a military zone.
At a date which has yet to be precisely determined archaeologically, the Arch of Septimius Severus, which stands astride the Carthage road

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Gaz. AA. Anastasiana (cont.)

gate (b_) a modern fountain is fed from a natural spring which in Byzan-tine times most probably had its source within the fort. The site was visited by R. de la Blanchere in 1686 and, although it is also mentioned by Cagnat and Diehl, his published description of it still remains the most detailed account available.
The fort is rectangular and measures internally about 53 x 45 m »
(0.24 ha). Its masonry exemplifies the typically Byzantine military practice of reusing material taken from abandoned Roman buildings.
Most of the facing blocks are of reddish-brown sandstone; some have rustication. The core of the walls and towers is of coursed rubble masonry, consisting of local sandstone lumps set in a hard yellow mortar. In places this contains quantities of broken coarse pottery used as aggregate. The walls are 1.40 m. thick, and are flanked by eight rec-tangular towers, one at each corner and one midway along each side.
The corner towers are each entered by a diagonal passage, 0.95 m« wide at its outer end, which narrows towards the inside of the tower. De
la Blanchere's plan represents the interval towers as open-gorge. It seems likely, however, that this is an illusion resulting from the faster rate of deposition inside the fort compared with the surrounding area (the result mainly of post-Byzantine occupation). Part of one of the towers (_f) still stands to a height of about 6 m., suggesting that the towers were of at least two, possibly three, storeys. Traces of a barrel-vault survive in Tower _e.
Although it seems likely that the fort had more than one entrance,
the position of only one is known with certainty. This stood on the west, and de la Blanchere describes it thus: "La porte a du e"tre bouchee; elle est centre un des bastions au milieu du flanc occidental, et on avait fait un bout de mur en saillie pour la proteger". His plan (jji, fig. 65) shows that he considered the gateway to be just north of the bastion (ID) , and the protecting wall to be parallel with the tower's north side. My own examination of the above-ground remains suggests a different arrangement, however, though it should be stressed that the full details can only be determined by excavation. In the first place, what de la Blanchere took to be a blocked gateway would seem to be the original west wall of the tower. The only position in

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Gaz. AA. Bagai (cont.)

The site lies 12.5 km. north of Khenchela, at the eastern extremity
of the larte fertile plain which extends north of the Aures to the east of Batna. The site occupies a slight knoll overlooking the plain on the east bank of a oued which flows, at certain times of the year, north from the Aures into the salt lake of Garaet el-Tarf. Like Mascula, it occupied a strategic position roughly midway between Theueste and Lambaesis.

The wall, following the contours of the ground, inscribes an irre-
gular quadrilateral whose sides are 374 (SW), 280 (1TW), 283 (NE) and 235 (SE) m. in length. Its 1172 m. perimeter encloses an area of 8.2 ha. Part of the interior is occupied by a smaller redoubt (see below). The site has suffered badly since Heron de Villefosse's companion, Jules de Lauriere, first surveyed it in the 1870s. Diehl saw walls standing up to 2.0 m. high in 1893; but today only the north-east rampart has escaped the stone looting which has turned the other walls into a con-tinuous robber trench (see PI. Vl).
The town wall was 2.20 m. thick, and was constructed with two faces
of large ashlar blocks bonded into a rubble core by means of headers. Diehl mentions that the inner facing was of smaller stones than the outer, The wall contained reused material, and, in places (eg. at _s), Roman structures were incorporated in its foundations.
Few towers now survive and one is therefore forced to rely upon the observations and measurements made by Heron de Villefosse and Diehl.
The north, south and east corners were flanked by circular towers, while in the west corner a Roman building was adapted as a rectangular bastion. Elsewhere the towers were all rectangular. Twenty-six towers are recor-ded in all, and apart from the gaps between towers _d and _e (94 ni.) and. between _f and _g (^0 m.), where it is possible that towers which formerly existed had disappeared when the plan was made, the longest stretch of curtain wall between towers would have been 60 m. Some tower measure-ments are given by Diehl, as follows: _b projects 1.90 m.; _c, 5»40 x 7.80 m.; _i projects 5.10 m.; _j projects 3.70 m.; _1, m and ri project 1.95 m.; £, 6.24 x 7.80 m. (walls, 1.65 thick); _t projects 0.80 m. ; v, 6.0 x 8.60 m. (walls, 1.95 thick).

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Gaz. AA. Bagai (cont.)

Two major gateways gave access on the south-east and south-west
sides. On the south-west, a gate 2.70 m. wide was flanked by towers
£ and £, which were flanked by curious buttresses ox additional chambers either side. The second gate was between towers h and _g, which measure 7.5 x 11.0 m. There was also possibly a postern, about 1.60 m. wide, between k and _j.
A smaller redoubt (70 x 63 m. internally) was built against the
inside of the north-west wall, enclosing 0.44 ha. Its walls were 1.40 m. thick, and it was flanked by square towers at the corners (3.50 x 4«00 m.) and midway along its sides. It enclosed a smaller work (26 x 26 m.:
ie. 0.07 ha.), with walls 1.15 m « thick, which was also flanked by
square towers. The north-west wall of the redoubt (that is to say, the town wall) was itself defended by a wall built 11 m. in advance of it, which left from tower _z and returned opposite the point at which the outer wall of the redoubt met the town wall on the inside. This may have performed the function of a ^poTeCxtojia . Diehl sees this whole complex as the last refuge of the Byzantine garrison if the town had fallen. It is permissible to ask, however, whether it all belongs to one phase. That the inner wall was contemporary with the town-wall there seems little doubt, since the siting of Towers x and £, which departs from the usual spacing of the towers, was evidently designed
to give it extra protection on the outside. However, the outer wall which abutted tower _z appears from the plan to have been later than the town wall; and as no special provision of towers was made at the points where the outer redoubt's wall met the town wall, it seems possible that the inner redoubt was the only part of the complex built at the same time as the town wall.
The town wall would have been completed at the time of Solomon's
second term as magister militum, between 540 and 544> the outer parts of the redoubt, if not contemporary with it, could have been added later in the Byzantine period or perhaps in a post-Byzantine period of occupa-tion.

349.

Gaz. AA. Bordj Hallal (cont.) Internal measurements

Tissot (9) Carton (3) Saladin (8) from Saladin's plan

m
NE
SE
sw
w

175
295
229
67 ^3 2
275/ 4

120
210
131

4°V

205 J 4

178.47
298.35
249-60

^351.60

178.8
289.4
237.7

"}338.2

These figures are quoted in full because, in the absence of any more recent survey and the unavailability of aerial photographs, they provide at present the only means for ascertaining the shape of the monument. Minor variations apart, some of the wider disagreements may be due to individuals measuring from different points on the wall: eg., inside
or outside the wall and, if the latter, including or excluding the corner towers. In the case of Dr. Carton's figures, however, the numbers are consistently smaller than those given by Tissot and Saladin, though,
the ratio of the sides to one another is virtually the same for all but the SEj an explanation for this might be that the surveyor failed to convert paces to metres, since the error is usually of the magnitude x 1.40-1.48> and this in metres would be roughly the length of a double pace.

Saladin is the only writer to provide a plan. Yet this also
reveals certain errors when it is compared with the remains in the field, expecially with regard to the line of the south-west wall. Diehl re-published Saladin's plan with no comment on the fact that on it the
o angle of the west corner is given as 150 , whereas on the plan made by M. Sadoux, which appeared in the same volume, it is shown as a right-angle (_4 , plans XXX-XXXl). Figure 22 represents an attempt to reconcile the internal wall measurements used by Saladin with what a cursory in-spection of the site suggested the shape of the south-west wall and west angle to be (it being impossible to undertake any accurate measuring). In this revised plan the wall appears to enclose an area of some 7.25 ha. The wall itself is 1.35-1.50 m. thick, and built of a rubble core
faced with ashlar blocKS, which include reused architectural fragments, columns and tomb-stones. At the western end of the north-west wall, there survive the pier bases for internal arcading, though how far this

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Gaz. AA. Bordj Hallal (cont.)

extended it is not possible to say.
The position of the gateways is uncertain. Carton refers to one
(_h) on the south-east side, flanked by rectangular towers. Allowing for the conversion factor of 1.45 needed to put Carton's paced measure-ments into metres, this would have been 36 m. across; the measurement evidently included the towers, which projected about 8 m. Carton also mentions a postern gate within Tower _o; although Sadoux's detailed plan of the tower shows no gate in this position and none is visible above ground level today, some credence is given to this assertion by the fact that one of the building inscriptions was found in the outer wall of the tower.

Apart from feature Ji, fifteen towers flank the enceinte. A detailed survey has only been made of those on the FW wall (4> _5) : Tower _o measures 9»5 m « across and projects 6.8 m., its walls are 2 m. thick
and its internal floor was carried on arches supported by a central col-umn; Tower ri measures 8.4 x 7.8 m., has walls 2 m. thick, and is entered by a diagonal passage 0.95 m - wide and covered with slabs; the other towers, j> and _a, measure 6.6 x 6.7 m. Tower jj_ appears to "be cutwater-shaped.

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(l) Atlas Tun. 50, Ghardimaou, 77; (2) Boisnard 1935, 35; Q) Carton 1891, 216-218; (4) Diehl 1893, 420-423; plate XXII5 plans XXX-XXXI; fig. 2; (j>) Diehl 1896, 214-215; 284; fig. 7-8, 46-47; (6) Guide Bleu 1971, 2495 (1) Romanelli 1970, 406; (_8) Saladin 1892, 427-429; fig. 44-44 bis; (_9) Tissot 1881, 32-33; (_10) Tissot 1888(2), 266-267; (_ll) von Petrikovits 1976, 67; fig. 3.

See Gaz. CB, Inscr. 15-16.
Map 3, no. 8.
Figure 4> 22.
Plates Vila-Villa.

351.

Gaz. AA.

CAESAREA

Cherchell (2°12'E 36°37'N) Town wall

In a rescript of Justinian, addressed to Belisarius in April 534> pro-vision was made for Caesarea to become the headquarters of the dux Mauritaniae prouinciae. Procopius records that an infantry company (\6xoc) under the command of John was sent there by Belisarius during the winter of 533-534- At the time of Solomon's campaigns in Mauri-tania Sitifensis,! however, in the early 540s, the whole of Mauritania II with the sole exception of Caesarea itself was, according to Procopius, in the hands of the Moors ruled by Mastinas, with the result that it was only possible to reach the city by sea.
The Roman land and sea defences of Gaesarea extended for at least
7,000 m. and enclosed an area of some 370 ha. P.M. Duval distinguishes five main types of construction in them, one of which, he suggests, may represent the Byzantine refortification, carried out after the town had suffered at the hands of the Vandals. This work, which he describes as 'grand appareil sans bossages', is found on the stretch of wall which guards the western coastal plain and on the east, where (south of Duval's tower 36 bis) the wall ascends the heights behind the town.
If Duval's deductions are correct, they imply that the whole of
the Roman circuit of walls was reoccupied militarily in the sixth cen-tury. It may be wondered, however, how many troops would have been required to defend such an extended front and for how long such a state of affairs could have continued. The X6x<>c sent by Belisarius can scarcely have numbered more than about 2,000, and may have oeen consid-erably smaller than that (see Ch. III. 4*166). It could well be that other, perhaps later, Byzantine defences also existed, built on a more modest scale to enclose only the nucleus of the town. These could perhaps have followed a course similar to that taken by the Turkish town walls that were built in 151& and destroyed in 1660 (_5).

Excavations in the forum area of Caesarea, in 1977> provided a terminus post quern of A.D. 530-5^0 for the abandonment of the forum square (4)»

352.

Gaz. AA. Caesarea (cont.)

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Cod. lust., I, 27, 2, la; Procopius, IV, 5, 5; 20, 32 (Kcu<jdp£ia).

(I) Atlas Alg., 4, 16; (2) Diehl 1896, 262; (3>) Duval (PM) 1946, 98; 168; pi. VII; (_4) Fentress, in Potter, forthcoming; (jj) Gauckler 1895,
31-33.

See Map 3, no. 9«

CALAMA

Guelma (? U 26'E 36U 28'N) Fort/Town wall

Procopius records the construction of impregnable defences at Calama under Justinian. Three inscriptions from the site associate at least part of the construction with the patrician Solomon and count Paul. The site is situated on north-sloping ground on the south side of
the Oued Seybouse valley. The Byzantine fortress was built at the highest point of the Roman town, and what remains of it today is sur-rounded by the modern town of Guelma.
When French troops first reached Guelma on 7 September 1836, the settlement consisted of no more than 200 inhabitants. Much of the Byzantine wall was still standing, and during the first decade of French occupation it was surveyed and studied by Duvivier, de la Mare, Ravoisie and Grellois. Today all that remains of the original walls are their north side, including Towers _c and _e, and part of the east side including Tower _h. Refortification of the site between 1842 and 1844 entailed the reconstruction of the wall on its original.lines and the provision of a wall-walk and rifle-loops. By the end of the 19th century, how-ever, the changing needs of the garrison had led to the destruction of the greater part of the monument.
The shape of the enceinte was that of an irregular thirteen-sided polygon, measuring overall 278 x 219 m » Two phases of construction can be identified both from its plan and from its masonry (see Fig. 24):

Phase It The western part of the enceinte and the five rectangular towers from JD to the re-entrant _t, appear to have belonged to an earlier phase of fortification from the rest. The masonry is described by

353.

Gaz. AA. Calama (cont.)

Ravoisie as, 'un appareil regulier, des pierres de grande dimension, des moulures ornant la base des tours ...' Grellois, whose survey work was carried out in 1844, writes, 'les pierres sont parfaitement unies et cimentees; au niveau du sol, elles reposent sur une sorte
d 1 entablement orne de moulures d'une certaine delicatesse. Aucune des pierres ... n'est garnie d' inscriptions f. The corner towers (_a and jj,) had diagonal entrance-passages. The plan also shows a postern (_s) next to Tower £. Ravoisie' and Grellois were followed by Diehl and Gsell in assigning a pre-Vandalic date to this wall.

Phase II; Grellois states that the rest of the wall was of a generally inferior style of masonry, and included reused architectural fragments and inscriptions. The wall was 2.40-2.60 m. thick. Eight towers belonged to this phase, and in the south-east a salient enclosed the great Roman bath building, which was evidently in a ruinous state by the time the wall was built (cf. JL5, pi. XXV). Grellois also states that the rubble core of the wall was unmortared; however, this may have been due to the weathering of the exposed sections.
Ravoisie's plan shows the towers of the second phase to have been
of the same design as those of the first. De la Mare's perspective drawing of Tower _c from within the enceinte (_4, pi. 176) shows its dia-gonal passage to have been covered by a lintel and relieving arch; Gsell (11, 158) notes that it was octagonal inside, but this may have been due to a later modification. The south wall of the baths salient was flanged by a bastion (m) which measured 4«60 m. across and pro-jected 3.5 m «
Ravoisie's plan also shows four gates. One (_s) belongs to the
earlier stretch of wall. Gate ji, however, is a recent construction and bears the date '1844 1. Gate I no longer survives, but is the best documented (15, pi. XXXV); externally it was 1.60 m. wide and 2.50 m. high; the passage was rebated 1.00 m. from the outside, and continued with a width of 2.00 m. and a height of 4.50 m. On the outside the door was covered by a lintel over which was set an inscription (Gaz. CB, Inscr. 17)> on the inside it had a rounded arch. Nothing is known of Gate n. De la Mare's plate 176 shows a possible fifth gate,

354.

Gaz. AA. Galama (cont.)

which Gsell (11, 15^)> says was blocked, situated in the north wall adjacent to Tower _c; Gsell's notes, however, also refer to this as part of the vault for a stair leading to the rampart walk. Another gate (f)j which does not figure on Ravoisie's plan, is the postern which still survives today (though blocked) next to Tower _e; this is about 1.20 m. wide and is surmounted by a relieving arch and lintel. Doubtless a parapet walk existed along part, at least, of the
enceinte, but nowhere has convincing proof been found for one. The thickness of the walls would probably have made internal arcading unnec-essary.

It has generally been assumed that the wall of Phase I, if not
entirely pre-Vandalic, was at least built on the foundations of a Roman wall, and that Phase II alone represents the refortification carried out by Solomon. The association of the latter with Solomon is given con-vincing proof by Inscription 17» referring to Solomon, which was not only found over a gate belonging to part of this wall but also refers to thir-teen towers, the exact number for the whole circuit if one excludes m.
It is questionable, however, whether the gap in time between the two phases was as long as some have supposed. A number of factors suggest that it was not:

(1) In the first place, it is not altogether clear whether the difference in masonry technique was so very marked between the two areas. Although Grellois (_2, 271) says that the first-phase work contained no inscrip-tions, Ravoisie' (13» 27) refers to architectural fragments and cornices built into the wall between ji and _!_ Ravoisie's elevation drawings of postern J. (pi. XXXV) do not suggest a hasty or imperfect standard of workmanship in Phase II. Differences of construction may have depended as much on what near-by Roman structures were available for quarrying as on chronological considerations; and one should also consider the possibility of post-Byzantine rebuilds which arcnaeologists may have taken to be original.

(2) Whatever the differences in execution may have been, it is clear from the plan that the design of the towers was the same in both phases.

355.

Gaz. AA. Calama (cont.)

(3) To the north-west of the enceinte the plans of Ravoisie', de la Mare and of the Atlas show the line of another wall, flanked by circu-lar bastions. Grellois writes of it: 'Ces murs offraient la meme epaisseur que ceux du camp; les pierres, en general des moellons, sont unies au moyen d'une forte magonnerie, et marquent, de distance en distance, 1'emplacement de tourelles circulaires' (j?, 273). This des-cription and the plans suggest this to have been a Roman town wall, pre-dating Phase I and enclosing a much larger area than the Byzantine
citadel.

(4) Although from the plan it seems possible that the south-east and south-west parts of the Phase I wall could have been built on the line of this Roman wall, neither Ravoisie's nor Grellois's description suggest this to have been the case; and even if they were, the north-west wall certainly was not.

(5) The plan itself suggests Phase I to have been part of a rectangular fort, measuring internally 114 x 136 m. and built enclosing the spring (j?, pi. II). It could be restored with eight towers, one at each corner and one midway along each side. Had this fort ever been completed, one would have expected the south wall of Phase II to have departed from its east angle rather than from tower JD. That this is not the case suggests that the fort was never completed in the manner originally intended.

These considerations strongly suggest that both Phase I and Phase
II belong to the Byzantine period. The fort, which enclosed 1.55 ha., may have been begun during Solomon's first .period of command, when Althias was in command of the forts of the region. The abandonment of the original design may indicate the temporary withdrawal of the garri-son, or may simply be due to a change in plan occasioned by a change in the needs of the garrison. The final enceinte of 4-33 ha., with its thirteen towers, was completed between 539 an^ 544> when Solomon was again magister militurn in Africa.

Bibliography:

George of Cyprus, 655 (KaXdjja (Ge 1.) ; KdXa^ia (Hon.)); Procopius,
de Aed., VI, 7, 10 (KaXa^d).

358.

Gaz. AA. Capsa lustiniana (cont.)

See Gaz. GB, Inscr. 20-21.
Map 3> no. 11.

CAFVT VADA

Has Kaboudia (11°09'E 35°14'N) Town wall

It was at Gaput Vada that Belisarius's expedition first set foot on African soil in 533. Belisarius immediately set about fortifying the bridgehead with a trench and a stockade of pointed stakes. In de Aed-ificiis, Frocopius relates how the site was subsequently transformed into a flourishing city and provided with a town wall. There is no evidence, however, to support the contention of Diehl and earlier writers that the new city was named lustinianopolis; this title seems to have been reserved for Hadrumentum alone of African cities.
Ras Kaboudia is a low rocky promontory ending in a narrow peninsula surrounded by reefs. According to Fellissier and Guerin, the Byzantine defences consisted of a ditch cutting off the penisula from the mainland, flanked at either end by advanced works. A Turkish lighthouse, Bordj Khadidja, formed part of the westernmost of these. However, it is clear from the examination made of this by Commandant Duvivier, just before all but the lighthouse, itself was demolished in 1906 (_2), that this was a ninth-century ribat (measuring 67 x 67 m., and flanked by rounded towers), which owed nothing to the Byzantines; the lighthouse incor-porates the minnaret of this building. Of Justinian's city, ruins seen by Hannezo extending over some 10 ha. and including a number of vaulted cisterns may have formed a part. The site has now largely been des-troyed by modern industrial development.
The city's prosperity, if real and not imagined, can have owed
little to its immediate territorium, which even today consists largely of sand-dunes, whatever the benefits of the water discovered during the construction of the defences. A more plausible explanation for its growth is suggested by its position on the coast, which would have enabled it to serve as an outlet for the agricultural produce, in part-icular olive oil, of the Tunisian sahel and steppe. The geographic

360.

Gaz. AA. Chusira (cont.)

town, watered like its modern successor by the streams which spring from the foot of the cliff below the fort (PI. IXa).
The aspect of the fort has not greatly changed since Diehl planned
it in 1693 (Fig, 15) It is roughly rectangular in shape, measuring internally 65 x 46 ra. (0.28 ha.). Walls evidently once stood on the south and west sides, for traces of their rubble-and-mortar core can still be seen in places adhering to the rock; for the most part, how-ever, these have completely disappeared. Nothing remains of the Byzan-tine north wall, which has been entirely rebuilt using smaller stones. Most of the lower part of the Byzantine east wall, however, and of its three flanking towers is intact, though it is masked by modern buildings, It is built in the usual sixth-century technique with large ashlar facing including much reused material. Tower. _b has vanished since Diehl recorded it; Tower ji has partially collapsed and is in urgent need of restoration. The position of the gateways is unknown; the main entrance should possibly be sought between Towers _e and _d, which stand only 10 m. apart.

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1893, 384-38?; plan XXII; (4.) Diehl 1896, 28l; fig. 64; (£) Guide Bleu 1971, 237; (6) Pellissier 1853, 290; (7) Piese 1885, 530;
(8) Poinssot(3)l884, 225; pi. XV; (_9) Poinssot(L)l936, 31; (jLO) Saumagne and Poinssot 1933, 249 n. (ll) Tissot 1888(2), 628-629.

See Gaz. CB, Inscr. 8.
Map 3, no. 14.
Figure 15
Plates IXa-b.

CONSTANTINA

Constantine, Ksantina (6°37'E 36°22'N) Fort? and Town Wall

In a rescript dated 534, Justinian made provision for Gonstantina to become the seat of the dux Numidiae. The city is only once referred to in the narrative of Procopius, when the author states that it was two days' journey from Gadiaufala. No sixth-century bishops are recorded,

361.

Gaz. AA. Constantina (cont.)

but the city is included in the Descriptio of George of Cyprus.
The ancient city of Gonstantina (Cirta) lies today beneath the
third city of modern Algeria, and virtually nothing remains to be seen of it above ground. The Roman city occupied a rocky plateau, shaped like an indented pentagon and measuring about 1 km. across at its widest point (north-west to south-east); the surface area of the plateau is 38.4 ha. The plateau forms part of a ridge running south-west to north-east, joining the Djebel Chettabah with the Djebel Ouasch, and slopes from 644 ffl. above sea level at its highest point to 580 m - in the south-east (Sidi-Rached). On three sides it is protected by the vertical sides of the Oued Rummel gorge, 100 m. high, while to the north-west the descent is almost as precipitous. On the south-west, however, an easier approach is possible along a narrow isthmus with steep slopes on
either side.

Prom the first century B.C. until the French occupation in 1837
the site's natural defences have been enhanced by a succession of man-made ones. The descriptions of the town by archaeologists working in the nineteenth century indicate that parts of the town wall that was stormed and subsequently destroyed by the invading French army contained masonry of types common in the late Roman and Byzantine periods.
(a) On the south-west, Ravoisie' records that the wall linking the three gates, Bab el-Djedid, Bab el-Oued and Bab el-Djebia, was composed of 'une muraille formee de materiaux antiques, parmi lesquelles on voit des fragments de corniches, de sculptures et d'inscriptions romaines'. (b) Near the western angle of this wall, on the site of the present Hcltel de Ville, a tower about six or seven metres square and seven or eight high, built of well-dressed ashlar, was destroyed in 1661 (12). (c) Further north, the lower 1.0 to 1.5 m. of the west wall of the qasba (destroyed by 1846) consisted of well-dressed rusticated masonry, flanked by a semi-circular tower (diameter, 10 m.). The wall was
1.50 m. thick, and extended for some 50 m.
(d) The east wall of the qasba (destroyed by 1846) was also built on foundations suggestive of late Roman or Byzantine work. Ravoisie's detailed survey of 1840 shows the lower 3 m. to nave been built of massive blocks (11, pi. VI-VIl). Above this, the wall appeared to have

364.

Gaz. AA. Cululis (cont.)

of which those at the north-west and south-east corners were circular, while those at the north-east and south-west corners were square; and that the smaller enclosure also had towers midway along its sides.
A contour plan of the site and surrounding area was made around
the turn of the century by Lieut. Roisin (_l). His plan of the rampart itself, however, is somewhat sketchy and in places inaccurate. Fig. 20 represents an attempt to correct some of the grosser inaccuracies.
(The revision is not, however, based on accurate measurements). The revised plan reveals the overall measurements of the enceinte to be about 150 x 300 m., and the wall to enclose an area of some 3.24 ha. The wall is 1.20-1.40 m. thick, and consists of a mortared rubble core encased by two facings of large stone blocks, mostly reused material, which are bonded into the core by means of headers. Six rectangular bastions or towers (_b, _d, je, _g, _i, _j) and one rounded one (_a) are visible on the ground. Point c^ represents a group of Roman cisterns incorporated into the rampart.
The positions of three gateways are known. A gap in the line of
the wall at f_, and a mass of construction projecting beyond the rampart on either side of it suggest the presence of a gate in this position, linking the fortified enclosure with an extra-mural settlement on the site of the Roman town to the east. However, although the projections have all the appearance of bastions designed to flank a gateway, such an entrance, if it existed, could not have acted as a major artery leading into the city, since it would have been blocked by a smaller redoubt, measuring about 20 x 26 m., built inside the walls at this point. As in the case of Bagai, where a similar arrangement is found, it is not clear whether the redoubt represents a contemporary Byzantine fortlet, of which the bastions formed an integral part, or whether it is a later, possibly medieval, feature built around the Byzantine gate-way after it had gone out of use. These questions could easily be resolved by excavation. On the south side of the town wall, a gap (_h) about 1.60 m. wide probably represents the site of a postern gate, flanked on the west by Tower i_. At point k, a large mound of stone blocks and rubble marks the position of the west gate. This was par-tially cleared in May 1944 by a group of German prisoners of war under

366.

Gaz. AA. Gadiaufala (cont.)

taken sanctuary in a near-by church.
Ksar Sbahi lies in a rich agricultural region on the southern edge
of a plateau which rises to an altitude of 900 m., overlooking the plains of the Haracta. The Roman settlement occupied an important crossroads on the southern loop of the Carthage to Constantina road, which passed through Tigisi. The Byzantine fort itself stands on the east side of a pass through which a road to the north led, via the Cued Cherf, to Thibilis and Calama. A spring rises just below its south-
west corner-tower.

The fort is rectangular and measures internally 4!-^ x 33.b m. (enclosing 0.16 ha.). It is defended by rectangular towers at the
four corners (_c. b.O x 10.0 m.; walls, 2.0 m. thick), and by one midway along the east wall (11.5 m » across, projects 7.0 m.; walls, 2.6 m. thick). The corner towers have lateral entrance-passages, those on the south being right-hand, those on the north left-hand, so that the overall plan of the fort is symmetrical about an east-west axis. Gsell was only able to locate one entrance, a postern on the south side, 1.45 m » wide; no doubt the main entrance was elsewhere, possibly in the fifth
tower.

At the end of the nineteenth century, the walls still stood several metres high. Gsell noted that although the towers were more solidly built than the rest, the general standard of construction fell far below that of other Byzantine fortifications. The walls were 2.60 m. thick. The fort was surrounded by an oval outer rampart, between 20 and
30 m. in advance of its walls. This had an open-gorge bastion on the north-west. Gsell describes its construction as mediocre. Unless it represents a post-Byzantine construction, intended to defend a settle-ment that had grown up around the fort, it could periiaps be identified
as a

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369.

Gaz. AA. Hadrumentum (cont.)

(I) Atlas Tun. 50, Sousse, 16; plan. (_2_) Carton 1907, 139-141;
(3>) Diehl 1696, 269-270; (4) Guide Bleu 1971, 299; (5) Lezine 1968, 44-45; (_6) Pellissier 1853, 82-83; (2) Tissot l88tf(2), 151-156; 159; (3), pi. IX.
See h. V: 324-325.
Map 3, no. 19.
Plates LXXVIIar-b.

HIPPO REGIVS

Annaba, Bona. (7^46'E 36U 54'N) Town wall and ?fort

The fact that Procopius describes Hippo Regius as 'a strong city in Numidia' (x6\ic te> No\>|-ii6S)V l\vp&} wken Belisarius occupied it in the winter of 533/534 has usually been taken to indicate that the walls, which had withstood and finally succumbed to the Vandal siege of 430/431, were still in a state of good repair a century later. The only thing that can be said in support of this theory is that there is no evidence to contradict it; but neither is there any specific documentary evidence for a Byzantine refortification, although it seems very likely that one took place. The only tangible documentary evidence for Byzantine mili-tary activity in Hippo are the tombstones of Buraido, a soldier of the numerus Hipponis Regii and of Maxentius, a senator of the numerus bis electorum. As for the town's ecclesiastical history, although Eraclius was designated Augustine's successor, no bishop is recorded after 430. The town is mentioned, however, in George of Cyprus's Descriptio, written in around _c.600. In the middle ages the town shifted to a new site some 2 km. to the north; the walls of this settlement, Bona el Hadida or Annaba, were built soon after 1058/59 (al-Bakri).
The Roman town stood on a tongue of land surrounded by water on all
but the south side: on the west the Oued Bou Ljemaa; on the east the Oued Seybouse; on the north the sea. The forum was situated midway between two natural defensive positions: on the west the Colline de Saint-Augustin (55 m « high, and 10 m. higher in antiquity) where the present cathedral stands, and on the east the Gharf el-Artan (2o m. high), much disfigured by post-medieval fortification and now the site of the museum. The shape of the latter is roughly rectangular, ana a stretch

370.

Gaz. AA. Hippo Regius (cont.)

of revetment wall on its north-west side, about 18 m. long, suggests that this may be the result of human activity. The wall stands about 4 m. high, and is composed of large blocks of stone laid in regular courses which vary in height between 50 and 100 cm. Of its thickness or construction nothing can be said, since its rear face is obscured by the earth pi lea up behind it. The general aspect of the masonry, how-ever, and in particular a clear vertical division that is visible between two sections that had evidently been built by different working parties, strongly suggest a military work of the late Roman or Byzantine period. Such a date is also supported by stratigraphy, as far as it is possible to reconstruct it, given that the area in front of the wall has been cleared of its archaeological layers by well-meaning excavators.
The wall is built just behind and, towards the south, partially cuts through the rear wall of a row of three shops which border a street on the other side of which is the entrance to the Great Basilica. It thus effectively blocks up the three back entrances of these buildings, and must therefore be later than them. Just how much later it would pro-bably be quite easy to determine by excavating the terracing behind the wall, and thus providing a terminus post quern for its construction. It appears, however, that the buildings had already been destroyed when the wall was built. Their walls had been razed 1.10 m. above the level of the thresholds of their rear doors, and traces of smooth mortar on top of them suggested that a floor may then have been laid at this level. The base of the terrace wall, which would doubtless have been set in a foundation trench, was roughly level with the same thresholds; and a ledge, 1.40 m. above this level, probably marks the level of the ancient ground surface from which the foundation trench would have been dug. Fortification of Chaff el-Artan in the early fifth or sixth century would have made excellent tactical sense, for at that time the sea still lapped against its north and east sides. A fort in this position would have been able to command both the port and the town wall at a vulnerable point where it met the coast. The extent of the town wall, however, and indeed of the Roman town itself is still unknown, although there is no reason as yet to suppose that it may not one day be located by excavation.

372.

Gaz. AA. lunci Sofiana (cont.)
inscription had come from Bordj Younga (lunci) (_8; 12). This argu-ment is supported by the appearance at the Council of Byzacium, in 646, of a bishop, Numidius, whose title, episc. eccl. Sofianae luncis, suggests that at the time that the public works were carried out at lunci under Justin II, the town was renamed after the empress Sophia.
A sixth-century bishop, Verecundus (d. 552), is also known from literary sources, and the town is mentioned by George of Cyprus.
Bordj Younga, with which the late Roman and Byzantine town of
lunci should now be associated (_12), lies in the Tunisian sahel, on the coast 9 km « south-west of Mahare"s. It takes its present name from a trapezoidal fort, with sides 40 to 47 m. long flanked by eight towers, which dominates the site of the town. The south and west corner-towers of the fort are seven-sided, while those on the north and east are circ-ular. The earth, however, surrounding the base of the east tower has been sufficiently eroded away to show that it too was built on a poly-gonal foundation (_1; 12; 14) • Of the town wall nothing has yet been observed at ground level, though the trace of an enceinte has apparently been detected on air photographs, the publication of which is still awaited (l8).
Diehl concluded, on the basis of the references made by Corippus,
that lunci was fortified under Justinian and later reinforced by a fort-ress built at "Macomades" by Justin II (_2). Saumagne, examining the fort of Bordj Younga, put forward the view that the polygonal base of the east tower was Byzantine, and that the Muslim superstructure of the fort had been built on the foundations of a Byzantine construction (_14» 763). In this he was followed by Poinssot, who argued that a Justinianic town wall, built he suggested by Solomon, was augmented under Justin II by the addition of the trapezoidal fort which later underwent restoration at the hands of the Aghlabids (_§-J3). There is nothing, however, either in its masonry or design that need lead one to believe that any part of the fort dates to before the ninth century. The name, (^asr al-Rum, by which al-Bakri appears to designate it, is as likely to indicate those against as those by whom it was built. Evidently the work was carried out in stages; but the two circular towers are better explained as the result of a change in plan that occurred during the course of construction (See PI. LXXV).

374.

Gaz. AA.

Kssr Belezma (5°54'E 35°41'N) Fort

An inscription shows that the fort was built by Solomon after he had become a patrician (ie. 536-544). The name of the site in antiquity is unknown, though it has been plausibly suggested by Albertini that it took the name of the Roman Lamasba (Merouana), which is 5 km. to the south.

The fort is situated in the middle of the plain of Belezma, a rich fertile area lying to the north of the Monts de Belezma, and delimited on the east by the Djebel Mestaoua, and on the north by the Djebel lessaouda and Djebel Fourhal. To the south-west, the valley of the Oued Barika leads towards Tubunae and the Chott el-Hodna; other routes also led north through Zarai to Sitifis, and north-east to Diana Veter-

anorum.

The fort was rectangular and measured internally about 125 x 112 m.
(1.4 ha.) (Pig. 14). It was flanked by rectangular towers set at the corners and midway along each side. Today much of the walling planned by Diehl (j>, plan IV) and excavated in the 1920s and 1930s Q.J _3; _£),
has been robbed out, leaving a rectangular-shaped plateau which still dominates the surrounding settlement. This plateau is largely the result of post-Byzantine occupation of the fort, which by 1154 had. already produced a tell-like mound within it (al-IdrlsT). In the late tenth century the fort had a military garrison, and stood at the centre of a prosperous town defended by a wall of pise* construction (ibn Hawqal).
The curtain walls of the fort were 2.50 m. thick, and built follow-
ing the normal Byzantine practice with large ashlar blocks laid in regu-lar courses and bonded with headers into a rubble core. A certain number of reused architectural fragments and tombstones built into it may have come from near-by Lamasba. According to Diehl (j?), the four corner-towers measured 10.70 x 9»30 m.; Tower _f was 15.0 m. wide and projected 8.60 m. (allowing for the curtain wall's thickness of 2.50 m.)j and Towers _d and Ja were 10.0 m. wide, and projected 6.60 m. Diehl's plan suggests that the corner towers had lateral entrance passages,
though these are not drawn. The wall thickness of the towers was usually greater than that of the curtain wall, varying from 2.50 to 2.70 m,

375.

Gaz. AA. Ksar Belezma (cont.)

The northern gatetower (_b) was excavated by MM. Carayol and Moulin
in the 1920s, when the inscription was also found in a piece of re-building (jl.) . Prom Ballu's notes of the excavation (_3) > it has been possible to prepare a plan of the gate (Fig. 6). The tower measured 7.10 m. across. Ballu unfortunately omits to mention how far it pro-jected from the curtain wall, but Diehl's figure of 10.0 m. overall would give a projection of 7.50 m. (His figure of 15 m. for the width, however, is certainly erroneous). To gain access to the fort one had to pass through two gateways, separated by a court, 6.35 x 6.10, flanked by stone benches (width unstated) lining either side. The outer gate was 2.80 m. wide, and was closed by means of a portcullis operating in a slot (20 x 20 cm.), cut 40 cm. from the outer face of the tower. Fallen voussoirs showed the gate to have been arched (it could also have had a lintel). The inner gate was set 8.50 m. behind the portcullis. Its outer end narrowed to 2.62 m. in width suggesting that it had been provided with wooden doors which opened inwards. Behind the outer jambs there extended a vaulted passage, 3.40 m. wide and 3.42 m. long. When excavated, the jambs were surmounted by a lintel; but this was evidently not an original feature, because the packing above it contained the two fragments of the inscription, which had most probably originally been set over the outer gateway of the tower.
On the west of the fort, liiehl noted a postern gate set in the
south side of the interval tower h 9 thereby producing a bent entrance. Both the gate and the doorway communicating with the inside of the fort were 1.25 m. wide.
The internal buttresses to be seen on the plans of Towers]D and
ji (Fig. 14) were probably intended to carry the rampart walk which had to make a detour when its path along the top of the curtain wall was blocked by a tower. There is no other evidence for internal arcading.

Bibliography:

al-Bakri, 107-108; ibn Hawqal, 91; al-Idrisi, 116;

377.

Gaz. AA. Laribus (cont.)

Veneria and the road to Constantina and to the south-east with Mactaris, Chusira and the steppe region of Byzacium. The forests that surrounded the town in the sixth century have now been cleared, and today the site lies in a plain given over to cereal cultivation.
The town wall describes the shape of a trapezium, measuring inter-nally about 180 m. on the north-east, 200 m. on the south-west and 215 m « from north-east to south-west (Fig.25). It encloses some 4.09 ha. and contains fresh-water springs. Midway along the south-west wall stood a fortlet, enclosing 0.10 ha. Diehl, whose knowledge of the site was derived mostly from Guerin and Esperandieu, provides the most detailed description of it. Today, however, very little masonry remains visible above ground (Towers _a, _j, jc and _z). The line of the wall is repre-sented by a well defined scarp, which in places serves as a modern field boundary; on the north-west, however, it is in the process of being ploughed away.
The walls were of standard Byzantine type, 2.50 m. thick and con-taining reused architectural fragments and inscriptions. They were flanked by circular towers (internal diameter, 6.0 m.) at the corners and rectangular towers along the sides. Of these, only the northern Tower _a now stands to any height (FlJCIIl). Diehl records that the first floors of both it and Tower _b were carried on cross-vaults of brick and small stones, resting on corner piers. Entry to the upper floors was presumably from outside the towers. Tower m measured 5»0 m. across and projected 5-50 m »
The spacing of the towers suggests that there were gateways between
_a and Jb, _c and _d, and _e and f_. Of these, only the gate between _c and jl has been confirmed; Diehl states that it had a rounded arch.
The redoubt, built against the inside of the soutn-west wall, was evidently not quite as Diehl's plan shows it. Tower j_ is hollow; the spring of a collapsed vault runs along the whole length of its south-west side just above the present ground level. Tower _k is solid and no more than 2 m. thick (NW to SE); indeed it is doubtful whether the standing masonry represents part of a tower at all. Diehl notea an arrow-slit at h. While the existence of the fortlet is beyond doubt,

378.

Gaz. AA. Laribus (cont.)

excavation is clearly needed to establish its plan (cf. PI. XVa).
In the eastern part of the enclosure stood an isolated tower (_z),
the south-east wall of which still survives to a height of several metres above ground, (Plate XIVa-"b).Its base measures 5*00 x 4*90 m - > and Diehl (_4) gives its height as 13 m.; its walls are 1.50 m. thick. The stonework is more irregular than, for example, that of Tower _a, which is the only comparable part of the town wall still standing. On the outside it is faced with large blocks, whose interstices are packed with smaller material; on the inside with small irregular pieces of stone. Two rectangular apertures pierce the south-east wall, one above the other. The lower has a lintel and semi-circular relieving arch, the upper merely a lintel. Inside, there is a corbelled stairway. Mud-brick (toub) work on the top of the tower evidently belongs to a later phase. Diehl suggests that the building was a watch-tower,
built in the 7th. century and associated with a basilica. Of its Byzan-tine date there seems little doubt; but excavation would be needed to investigate further its precise date and its relationship to other buildings in the vicinity.

Bibliography:
Corippus, loh. , VII, 143-146 (Laribus) ; George of Cyprus, 660 (Anpd6o»c (Gel); AapCpowc (Hon.)); Procopius, IV, 22, 12-20; de Aed., VI, 7,
10

al-Bakri, 99; Ibn Hawqal, 84; al-Idrisi, 136; al-Muqaddasi , 19; al-Wazani, 373 (712).

(I) Atlas Tun. 100, Ksour, 70; (_2_) Boisnard 1935, 37; (.3) Bruce 1765, 211; (_4) Diehl 1893, 378; 379-384; pi. XIV; plan. XXI; (£) Diehl 1896, 272-273; fig. 58; (§) Ennabli (A) 1976, 484; (?) * Esperandieu 0000, 5; plan; (8) Guerin 1862(2), 73-74; (%) Piese 1885, 528;
(JLO) Poinssot (L) 1936a, 33; (.11) Romanelli 1970, 405; pi. 354a;
(JL2) Tissot 1888(2), 455-

See Map 3, no. 23.
Figure 25.
Plates XHIa-XVa.

380.

Gaz. AA.
LEPCIS MAGNA

Lebda (14°1#'E 32°3b'N) Town wall

The works of Justinian at Lepcis Magna are described in some detail by Procopius. During the Vandal interregnum, the city, once large and populous, had been virtually deserted, and sand had encroached upon it. Justinian therefore built a new city wall from the foundations upwards, not, however, on as large a scale as it had been before, but much smaller, so that the city should not again be made weak by its very
size and also be exposed to the shifting sands. Within the city, the emperor dedicated a church to the Mother of God and built four others. He also rebuilt the 'palace' of the emperor Severus (see Ch. III. 1:129) Procopius's account of the events of 543, in which the leaders of the Leuathae were slain at a banquet held by the dux Tripolitaniae, Sergius, indicates that the city was already fortified by that date.
Lepcis Magna had been made the seat of the dux limitis Tripolitanae prouinciae by Justinian in 534 (Cod. lust.). Under the provincial reorganization carried out by the emperor Maurice in tne closing years of the sixth century, Tripolitania, including Lepcis, became part of the diocese of Egypt (George of Cyprus). The fact that Lepcis is not
c c

mentioned by the Arab sources which record the raid of Amr ibn al- Asi, in 643, might suggest that it had been replaced as military headquarters by Pea by that date (13).
Lepcis had developed in Phoenician and Roman times as a port at the mouth of the Wadi Lebda. By the end of the fourth century Al), it was surrounded by a stone-built defensive circuit which enclosed 130 ha.
In or before the reign of Hadrian, a dam, constructed 1.7 km. upstream from the port, diverted the course of the wadi into the bed of the Wadi Rsaf to the north; but already in the fifth century there are signs that the wadi was returning to the course that it occupies today. Both the Byzantine and late Roman defences have been studied in detail by Good-

4 child and Ward-Per^ins (IT), and since more recent researches in Lepcis (eg. _3, _4 and _8) have added comparatively little to our knowledge of them, the account that follows is based very largely on the description and conclusions of these two authors.

381.

Gaz. AA. Lepcis Magna (cont.)

As Procopius states, depopulation and the advance of sand over the site in the fifth century (through the agency not only of wind, but also of water, as excavation has shown) had reduced the city to a mere shadow of its former self. Archaeological investigation has in fact revealed the existence of two Byzantine walls, both of which enclosed a shrunken, and apparently shrinking, nucleus around the port; the outer wall enclosed an area of 44 ha., which was subsequently reduced to 28 ha. by the construction of the inner one. Both enceintes matce use of the Severan forum as a fortified redoubt; Goodchild and Ward-Perkins suggest that this became a military zone, enclosing the palace of the dux, while it is quite certain that the-adjacent Severan basilica became the church of the Mother of God, to which Procopius also refers (Ward-Perkins and Goodchild 1953, 22-24; fig. 8; pi. XIa-c).
At Lepcis, the constructional technique of the walls differs from
the usual Byzantine practice seen in Africa, in that they are solidly built from selected reused blocks of sandstone or limestone, and have no rubble core. They were a uniform 1.90 m. thick and set on a solid con-crete foundation, 2.20 m. broad. The mortar had a high lime content, derived from crushed sea shells, a feature which distinguishes the Byzan-tine mortar at Lepcis from that of other periods. A. C. Blanc indenti-fies the shells as Murex trunculus L, and suggests that they were derived from the waste heaps of a purple dye manufactory somewhere in the vicinity (8) (see PI. XVIIa).
The layout of the walls is shown in Fig.26 . Three sectors of the surviving primary Byzantine wall were not incorporated into the final enceinte, and had been systematically dismantled when the latter was built. The stretch of wall associated with tower Bl was intended to continue the line of wall B3-B17 to meet the sea wall C2 north-west of the Forum Vetus. Tower Bl was found to have been dismantled; only one masonry course survived above its foundation. The second sector, B5-B6, lies on the north-west side of the Severan piazza. Wall B3 was built along the north-east edge of the so-called 'Via Trionfale 1, and butted against a late Roman or Vandal-period defensive wall, which continued on the same alignment to the north-east. (This relationship has now been

382.

Gaz. AA. Lepcis Magna (cont.)

destroyed in order to provide better access to the site for visitors: cf. 14) pi. XXb). In the piazza itself, such evidence as survives suggests that a wall (B6) was at first projected to block the entrance to the Colonnaded Street, but that this plan was quickly abandoned in favour of a more elaborate, but imperfectly understood, gateway (_14> fig. 7). South and east of the piazza (Sector B7-B12), the course of the wall has been traced but not extensively excavated. Tower B8 (excavated 1945) measured 5-65 m. across and projected 4.50 m. At a point 6 m. to the east of it, the wall is carried on an arch over the specus of a Roman aqueduct, which v/as evidently still in use at the time. Trial trenching in 1949 failed to produce any trace of the wall between Point Bll and Tower B12, though it is certain that part at least of this sector was begun before the plans were changed, as a portion of it which survives at its junction with the inner wall just west of B12 demonstrates (see below).
In the final phase of the Byzantine defences, the triangular area between Sector Bl and the sea was abandoned and the town's northern line of defence was made to run along the north side of the Forum Vetus, from Tower B 17 to the Sea Wall Cl. The occurrence of the diagnostic shelly mortar in Cl shows that at least part of the sea wall was rebuilt in the sixth century. The wall cut diagonally across the temple of Rome and Augustus, and ran along the rear of the temple of Liber Pater. Tower Bl6 situatea between the two temples, flanked a postern gate situated on its north-east side; this was 1.50 m. wide and 3.0 m. high, and was covered by a rounded arch. The tower was roofed with a barrel-vault; its doorway has a lintel and relieving arch, and the interior was lit by two arrow-slits. A stair leads up to the parapet walk on the inside of the wall north-east of the postern (Plate XVl).
Tower B17 must belong essentially to the second phase, since its diagonal entrance passage shows that it was designed as a corner-tower. Prom B17 to B3, however, the wall follows the same line as the primary wall. Midway along this section it crosses the Gardo, and the entrance to the town is defended by a massive gateway (32). This consists of a portal, 2.5 m. wide and 6.5 m. high, flanked by two rectangular towers,

383.

Gaz. AA. Lepcis Magna (cont.)

each measuring 6 m. across. The threshold was about 50 cm. above the level of the paved Cardo, suggesting that the road level had risen. When excavated, in 19^5 (^)? the gate was found to have been completely blocked up. The good quality of the blocking suggested that this had been done in the Byzantine period. The gateway was covered, by a flat arch, with joggled voussoirs, backed by a barrel-vault; it had formerly been closed by means of a pair of pivotted wing-doors of wood. The towers were both covered by barrel-vaults, and entered through arched doorways from within the enceinte; inwardly splayed apertures served both for lighting and as loopholes. Inside the wall, to the south, a stair carried on arches led up to the parapet walk.
The re-entrant between the north wall and the Severan basilica was defended by a tower (B3). This is now filled with sand; but is is possible to see that it too was barrel-vaulted, and had two arrow-slits on the north, and one on the west. The entrances to the Severan forum itself were blocked up, and it seems more than likely that it was conver-ted into the military headquarters of the city. Late walls within the area were unfortunately removed by the Italian excavations without proper records being made, and the plan of the internal Byzantine structures is therefore unknown. Caputo's identification of the sixth-century ducal palace with a complex of buildings, including a rotunda, excavated be-tween 1955 an<i 1965 and situated some 250 m. beyond the city walls to the north-east, is not supported by any stratigraphical evidence, and
in view of the position of the buildings seems highly improbable (cf. _6, 107-110; Goodchild 1965). The south-western side of the Severan forum was defended by a tower (B4.) > which has now been demolished (_4). This measured 7-0 m. across, projected 5»0 m., had walls 1.75 m » thick, and was built around the outside of an existing doorway into the forum.
The doorway had subsequently been blocked, as had a pair of posterns (1.70 m. wide) in the north-west and south-east v.alls of the tower. Ground level at the time of the construction of the tower was 1.60 m. above the level of the Roman street. This tower must have belonged to the second phase, since it is evident that the primary wall was intended to enclose Church 3 (see Fig. 6),

384.

Gaz. AA. Lepcis Magna (cont.)

It is most likely that the secondary wall continued in a south-easterly direction from the east corner of the Severan basilica, although no trace of it has yet been found on the north-west side of the Colon-naded Street. Tower B18, on the south-east side of the same street, is a massive polygon, over 9.0 m. broad, which quite probably formed one of the flanking towers of a gateway in the centre of the street. Only one interval tower (B20) has been recorded between Bl8 and the angle near
to B12:. The junction of the outer and inner walls occurs 9 m. west
of B12. This point was examined by excavation in 1950, when it was proved conclusively that the inner wall was later in date than the outer (14» fig. 10). Tower B12 itself measured about 7 ro. across and pro-jected 4»5 m » ? Gtoodchild and Ward-Perkins suggest that in view of its size it may have been associated with a postern, although there is no other evidence for one. North-eastwards from B12, the two walls fol-lowed the same course along the south-east mole of the harbour. B13 represents the position of an internal ntair, supported in all probabil-ity by an arch, which led up to the parapet-walk. Some 22.5 m « north of _B_l_3j another tower (here called B2_l) was located by the Italian Archaeological Mission in 1952; this measured about 5 m » square, and was built over the ruins of late Roman structures. Goodchild and Ward-Perkins suggested that a depression in the ground surface in the vicinity of B14 might represent the position of a gateway; but excavations in the 1950s revealed a continuous wall, following the same course as the late Roman wall along the top of the Severan harbour mole and enclosing the watch-tower at its tip (_3, pi. LIII).
No evidence for a ditch or TCpotetxiaiJia has been found at Lepcis,
though the former has been suspected on the north bank of the present course of the wadi, in front of the wall between BIO and fill.
The similarity of the masonry between the two phases of the defences suggests that no great period of time elapsed between their construction; it also seems likely that the outer wall was never completed. The evi-dence for the defensive state of the city in 543 argues strongly for
the inner wall having been completed by then. The blocking of Gate B2 and of the two posterns in Tower B4 may have been the result, as Goodchild

386.

Gaz. AA. Limisa (cont.)

prefecto; if one accepts that the inscription dates to the period when Gennadius was exarch, it can be dated to between 5^5 and c. 600. The see of the episcopus Limmicensis, who attended the African council of 646, is probably to be identified with Limisa.
Limisa is situated in the valley of the Oued Maarouf, on the south-east side of the watershed of the Tunisian Lorsal. The fort itself stands on the slopes of the Djebel Serdj, at around the 500 m. contour, overlooking the site of the Roman town and the river valley beyond it. One of the prime factors influencing the choice of site must have been the existence of an open cistern, measuring internally 28.40 x 11.25 m. and 1.35 - 1»45 m » deep, lined with opus signinum, which was fed from a near-by spring by means of stone pipes (_3, 314- 315)- The south-east wall of the Byzantine fort stood on top of the north-west side of this cistern, and a later system of canalization showed that the cistern had continued in use throughout the period of occupation of the fort and perhaps even into the Muslim period.
The fort is rectangular in plan, and measures internally 31»15 x 28.85 m. (0.09 ha.). It is defended by four corner towers, and its entrance was near the centre of the north-east wall. Ksar Lemsa is
one of the best preserved Byzantine monuments in North Africa. Apart from the south-east wall, which has almost completely collapsed, much
of the fort, both walls and towers, stands to its original height; restoration work in 1961 entailea the reconstruction of part of the
west tower (j^) and of the south-west wall. In recent years the interior has been completely excavated down to Byzantine levels by M. Khaled Belkhodja of the I.N.A.A., and the final report, when published, promises to throw much new light on the internal arrangement of such forts and the later occupation of this one in particular (cf. interim report: 3^.
With the exception of the south-east wall, which was only about
1.30 m. across, the walls are 2.20 - 2.25 m. thick, and built according to the usual Byzantine technique with two ashlar facings enclosing a mortared rubble core. It is quite certain that the stone was derived from the buildings of Roman Limisa (cf. 16). The walls carried a ram-part-walk, about 10 m. above the ground, which was reached by means of

387.

Gaz. AA. Limisa (cont.)

a stone staircase, part of which is carried on an arch, just south of the gateway. Crenellation and a parapet added a further 1.50 m. to the height of the walls $ the crenellation, some of which appears to be original, is built with an infill of small material, including brick, held between a pair of larger stone orthostats. The rampart-walk was paved with flag-stones and bordered on the inside by a parapet, 0.50 m. high.
The gateway (JD) was 1.84 m. wide and was set between a pair of
solid buttresses, 2.15 ni« wide, which projected 1.0 m. from the face of the wall. These may have formed the base of a gate-tower of some kind. Inside the gateway, two columns flanked the entrance. The lengthy duration of the fort's occupation is illustrated by the discovery, during excavation (3 , 317)> of two thresholds, one 1.05 ra « above the other. There also appears to be evidence for the conversion of the normal 'straight-through' entrance into a bent entrance in a later phase of occupation, possibly, as M. Belkhodja suggests, after the Arab con-quest. The two columns may also perhaps belong to this phase.
In plan no two of the four corner towers are quite alike. Tower
_a, which is the largest (7.10 x 6.00 m. j walls 1.20-1.40 m. thick), and Tower _c (5.25 x 5«°5 m.) sit astride the walls. Towers _d (5«10 x 4.95 m.j walls 1.25 m. thick) and j? (5«25 x 4»95 m.) are more conventionally designed and have Z-shaped entrance-passages. Had it not been for the existence of the cistern, which the builders were obliged to take into account when constructing Towers _c and _d, the fort would be roughly symmetrical about an axis running from north-east to south-west. All four towers were four storeys high and had wooden floors throughout, the presence of which is attested by beam-slots. The first floors probably communicated with the first floors of the buildings, now des-troyed, which covered the interior of the fort. Their second floors, however, communicated directly with the rampart-walk at a height of some 10 m. above ground and their third floors represented the fighting plat-forms, at about 16 m. above ground level. These were probably reached by means of wooden stairs or ladders inside the towers and were protected by crenellations similar to those of the rampart walk, adding a further

388.

Gaz. AA. Limisa (cont.)

2.0 m. to the height of the tov/ers. The tower chambers were lit by internally splayed arrow-slits.
M. Belkhodja's plan shows that the part of the fort's interior
that had been excavated by 1968 (the north-western part of the fort) was filled with masonry structures. For a full analysis of these, how-ever, we must await the excavator's final report.
Dating the fort is not easy. There appear to be three possibil-ities: (i) the fort is Justinianic and the inscription relates to an entirely different structure situated elsewhere; (ii) the fort belongs essentially to the reign of Justinian, Justin II or Tiberius II Constan-tine, but one of its towers was rebuilt under Maurice; (iii) the whole work is Maurician, in which case "turris" refers either to a single tower or to the whole fort. Diehl favoured a Justinianic date, though he did not rule out the possibility of later repairs under Maurice.
The architectural eyidence provides no clues as to date, and there are no obvious signs of repair in antiquity on a scale sufficient to justify a building inscription. The Z-entrance to the corner towers can be paralleled at Tubunae, but this is undated. Since no other structure with which the inscription might have been associated has been found, and since there are no _a priori reasons, despite Diehl's special plead-ing, why the fort should be Justinianic, the simplest and most logical explanation at present seems to be that inscription and fort go together, and that the fort dates to between the years 5^5 and _c. 600 in the reign of Maurice.

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Maier, 162 (Limmicensis (646)).

(_!) Anon 1928, 24-25; fig. 2; (2) Atlas Tun. 100, Dj. Bou Dabouss, 5-6; (3) Belkhodja 1968; (_4) Boisnard 1935, 35; (j?) Cagnat l888a, 16; (_67 Cagnat 1909, pi. p. 130; (7.) Deschamps 1934, fig. 8; (_8) Diehl 1893, 389-397; pi. XV-XVIII; plans XXIV-XXV; (%) Diehl 1896, 205-210; 282; fig. 42-44; pi- VIII-XI; (_10) Diehl 1901, fig. 84-85;
(11) Duval (N) 1972, 1162; fig. 16; (JL2) Ennabli (A) 1976, 471;
(_13) Flick 1898, 417-424; (_14) Fournier 1935, 36; Qj?) Guide Bleu
1971, 267; (16) Merlin 1908; (17) Poinssot (j) 1884, bO-82; pi. I;
(18) PoinssotTL) 1936a, 33; (ifT Reinach, in Tissot 1888(2), 580-
5"Hl; (_20) Restle 1966, fig. 13; (21) Romanelli 1970, 405-406; pi. 354b;

389.

Gaz. AA. Limisa (cont.)

(22) Toy 1955, 59; pi. 66a (wrong caption); (23) von Ptrikovits 1976, 72; fig. 5-2.

See Gaz. CB, Inscr. 36.
Map 4» no. 79-
Figures 5> 7> 16.
Plates XVirb-XIXb.

MADAVROS

M'daourouch (7^55'E 36U 05'N) Fort

A bilingual inscription, still in position over the main gateway, shows the fort to be the work of the magister militurn and prefect Solomon.
A 6th- or 7th-century bishop, Maurentius, is also attested for the town. Madauros lies about 25 km. south of Thagaste (Souk-Ahras) on the
Roman road leading from Carthage to Theueste,and was linked by road with Thagura to the east and with Tipasa (Tifech) and Gadiaufala to the west. The town occupies a sloping site at an altitude of about 800 m. on the north flank of the Bjebel bou Sessou, which marks the watershed between the basin of the Oued Medjerda and the Oued Mellegue. The Byzantine fort was built at the centre of the town, overlying part of the forum. The excavations by M. Joly in the 1910s finally resolved the con-troversy apparent in earlier accounts concerning the odd shape of the fort (of. j6; _8; £; 12; _13) . His researches (_2; 7.5 14) showed beyond all reasonable doubt that the fort had originally been laid out, and work begun, on a rectangular plan, but that this had been abandoned during the course of construction in favour of a smaller enceinte, which made use of the hemi-cycle of the ruined Roman theatre as the foundation for its north-west wall (Fig. 11). Had the original plan been carried through there is little doubt that the theatre would have been demolished to provide the necessary building material for it.
The fort as originally planned would have enclosed 0.24 ha. and
would have measured internally 3&.4 x 63.3 m. The only surviving part of it that was not incorporated in the smaller fort is the foundation of the west tower (e) and the adjacent parts of the north-west and south-west walls. The base of Tower e measures about 7-0 x b.5 m., and has

390.

Gaz. AA. Madauros (cont.)

walls between 2.00 and 2.20 m. thick, though its superstructure may-have "been smaller. It had a left-hand lateral entrance-passage. The foundations of the south-west and north-west curtain walls are 2.10 and 2.20 m. thick respectively; the former contains a drainage culvert, some 20 cm. square, which runs through the full width of the wall.
The north-west wall was backed by two internal buttresses, 2.40 m. apart and 4.0 m. wide, which thickened the wall in places to 4.50 m. The purpose of these is unknown, though it is quite possible that they were intended to support a stairway to the wall walk. What remains of the abandoned part of the fort survives today to a maximum of two courses above the excavated ground level. It is not possible to say with certainty whether this represented the state of building when it was abandoned, or whether this part of the fort was systematically dismantled, as at Lepcis Magna, to provide material for the smaller fort and give a clear field of vision to its defenders.
Gsell and Joly suggest that the whole of the south-east wall of
the smaller fort, including Gate _c, Towers _b and _d, and parts of the north-east and south-west walls, belonged to the earlier phase of con-struction. Although they state that the later construction work is inferior in quality, however, the stretch of wall between the north-east wall and the theatre, which includes Postern _a and must belong to the second phase, is not noticeably different in character from the north-east wall itself. The constructional technique is of the usual Byzan-tine type, ashlar facing with a rublle core, both of which make use of material taken from the forum area. Advantage is often taken of exis-ting Roman buildings to serve as a foundation, as for example occurs at the north corner, where a temple podium is incorporated into the wall. The north-east, south-east and north-west return wall have internal arcading, which supported a parapet walk 11.50 m. above ground level; it is quite likely that this continued on the south-west, where the upper part of the wall has unfortunately collapsed. The walls and arcade piers are built on a foundation of uniform thickness: north-west return, 2.15 m.; north-east, 1.75~1«90 m »> south-east, 1.80 m.; south-west, 1.80 m. In the north-west the entrances to the theatre

391.

Gaz. AA. Madauros (cont.)

were simply blocked up, and a wall, 2.60 m. thick, was built around the top. The smaller fort enclosed an area of 0.17 ha., compared with 0.24 ha. for the larger one.
The south and east corners of the smaller fort were flanked by rectangular towers, inherited from the earlier phase. Tower _b measures 7.0 x 6.5 m., and its walls are 1.45 - 1.60 m. thick. The ground floor is entered through a left-hand lateral passage, 1.72 m. high and 0.80 m. wide, the door-frame of which is covered by a lintel and relieving arch. The passage runs somev/hat obliquely, because the north-west wall of the tower is out of line; the door opens inwards. The first floor was probably reached by means of an external wooden stair; the outer door-frame of the entrance was covered by a reused sculptured arched lintel, and a wooden door opened outwards at the inner end of the passage. The second floor, which like the others was of wood, was originally supported by reused cornice fragments, projecting from the walls at a height of 7.BO m. above ground level. The third floor would have communicated with the wall-walk. Tower jl was broadly similar in design, measuring about 7«0 m. square. It was entered by a right-hand lateral passage, closed at the inner end by an outward swinging door. The second-floor door does not survive.

The main gateway was of the gate-tower type and situated midway
along the south-east wall. The tower (_c) measures 8.0 m. across and projects 7.10 m. The inner and outer gates were separated by distance of 5.0 m. The outer gate is set back from the outer face of the tower and is about 1.90 m. wide and 3.30 m. high. It is covered by a flat arch, consisting of three joggled voussoirs, on the keystone of which is carved in relief a monogram cross, flanked by a, and w, set in a circle. This is backed by a barrel-vault, which also serves as a relieving arch for it. It is above this that the inscription is set. The inner gate-way is similar to the outer, except that the flat arch has fallen.
There is a postern gate (_a) in the north-west return wall, 1.15 m « wide and 1.60 m. high; it is covered by a lintel and relieving arch.
It is difficult to make sense of the internal structures of the
fort (cf. 14, 131-132), since excavation was not, so it seems, conducted

392.

Gaz. AA. Madauros (cont.)

following a strictly stratigraphical methodology, and most of the Byzantine layers have been removed to expose the Roman footings beneath. A subterranean passageway passes from inside the fort under the north-east wall to a well-head situated some 30 m. away. It seems likely that this was in use in the Byzantine period, but stratigraphical proof-is lacking. An outer wall to the north-west of the fort, 0.90 m. wide and of interior construction, which made use of the footings of Tower _e and of the original north-west wall, is also noted by some writers (cf 12, plan p.28l), but no longer exists today. The conversion of the adjacent forum basilica into a«.maison a. auges»or stables need not neces-sarily have taken place in the sixth century (cf.2).
The inscription does not make it clear whether the fort was completed during Solomon's first or second period in office in Africa. If, as seems likely, the fort was begun during the first of them (534-536), however, a possible reason for the abandonment of work and its subse-quent resumption and completion to a different plan could have been the mutinies of 536-537? in which the forces of the dux flumidiae played a prominent part. The final completion of the work could therefore be ascribed to Solomon during the years 539-544. It may be noted that a change of plan during construction has also been noted at Calama, which lies not far distant from Madauros.

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(_8) Diehl 1893, 344-350; pi. VII-XI; plans XV-XVII; (%) Mehl 1896, 74; 180; 202; 205; 286; 601-602; fig. 4, 14-15, 41; pi. VII;
(10) Diehl 1901, fig. 86; (II) Fevrier (PA) 1971, pi. XIII; (JL2) Gsell 1898, 281-284; plan; (J3) Gsell 1901(2), 378-383; fig. 164-165} pi. 100-101; (14) Gsell and Joly 1914(2), 53-54; 126-132; pi. I-III, IX-XI bis, XVI-XVII, XXII-XXIII; (jL5) Leschi 1952, 40-46; (J.6) Playfair 1895, 243-244; (1.7) Romanelli 1961, 764; (.18) Romanelli 1970, 402; 404-406; pi. 358a; (1%) Service des Antiquites 1951, 69; (20) Tissot 1888(2), 816; (21) von Petrikovits 1976, 64; fig. 1.2.
See Gaz. CB, Inscr. 5.
Map 3, no. 26.
Figures 11, 12.
Plates XXa-XXIIa.

396.

Gaz. AA. Mileu (cont.)

north-west of Constantina, at an altitude of 460 m. To the west it was also connected by road with Cuicul and Sitifis. The new bourg that was laid out "by the French in the nineteenth century was sited a short distance to the north-west of the ancient town, which has been occupied more or less continuously since the middle ages; thus, in contrast to Calama and Sitifis, the town wall, which apart from some medieval patching is essentially the work of Justinian's army, has survived to the present day virtually intact. The only major transformations that have taken place are in the south-west corner, where a French army post was established, and on the west, where a small section of the wall, including the west gate, has been demolished.
The town was surveyed by Capt. Scheffler in the early years of the French occupation, and his plan, published by de la Mare Q, pi. 108), has formed the basis for all subsequent topographical work. The wall extends in an irregular fashion for some 1,200 m., and encloses about 5.14 ha. It is 2.20 m. thick, and constructed in the normal Byzantine fashion with a mortared rubble core and ashlar facing, incorporating reused material. Seventeen towers flank the enceinte (10, 233). Of these the Corner Tower _c measures 7-60 x 7.20 m., and is entered by means of a diagonal passage. Tower ji, which defends an obtuse angle on the south-east side of the qasba, is 9«20 x 6.80 m., and is entered by a lateral passage. The base of Tower _m was excavated by M. Pergola
(11) in 1927, and again by M. E. Stawski (10) in 1957. Its structure is that of a quadrifrons 10.90 m. square, with the archways blocked (Fig. 8; PI. XXIIIb); there is no question, however, of it having been adapted from a pre-existing building, as happened in the case of the Arch of Caracalla at Theueste. The tower flanks a position where the wall's alignment changes by 27 ; thus the north wall projects 8.80 m. and the south only 8.10 m. At their weakest points the tower's walls were 1.40 m. thick, while above the arches their thickness was 2.80- 3.00 m. The arches themselves are still standing, although the east one appears to have been rebuilt using smaller material. The central vaulting has collapsed, however, and its nature can only be conjectured. The tower was entered from inside the town through a small doorway on

398.

Gaz. AA.
OEA, TRIPOLI

Tripoli, Tarabulus. (13°12'B 33°54'N) Town wall

Procopius makes no specific reference to Qea, although, it has been plausibly suggested that one passage in de Aedificiis, which refers to the construction of a town wall and public baths, relates to Qea rather than to Lepcis which the author has already described in some detail (_4; j5). The city was evidently fortified by the time of its capture
("* C

by Amr ibn al- Asi in 643; but the defences extended only on the land-ward side, for the Arabs were finally able to penetrate the town by fol-lowing the shore line from the west a low water (Ibn °Abd al-Hakam; al-
Q

Ya qubi; Ibn al-Athir; al-Bakrl). Since no reference is made to Lepcis Magna in the accounts of the Arab conquest, it seems possible that Qea had become the military headquarters of Tripolitania by the seventh century. Al-TijanT, who also describes the siege, states that the walls were then destroyed. However, they must have still been
Q

standing when the inhabitants of the town closed its gates to Ibn Sa d in 647 (See Ch. II. b1: 103), The town was refortified in the eight cen-tury, during the course of which a new land wall was built in 74^/749 a sea wall in 795/796 (al-TijariT; al-Bakri); these were further stren-gthened in 955/956 and supplemented by an outer enceinte in 1215/1216 (al-Tijani).
Ancient Pea lies today beneath the capital city of the Libyan Arab Republic. It occupied a triangular promontory, bounded by reefs and the open sea on the north-west and by a sheltered harbour, protected by a part-natural part-man-made mole, on the north-east.
When the Italians took Tripoli in 1911, the city was surrounded by
a circuit of earth-filled ramparts designed for artillery (cf. 3). Be-tween 1913 and 1916, these were mostly destroyed, and all that remains of them today is part of Bab al-Zanata in the west, a stretch of wall to the north of it and another stretch between Bab al-Hurria and the qasba (described as ruinous by al-Tijani in 1306/09, but apparently still habi table) in the south-east. A detailed study by Aurigemma, carried out while the destruction was in progress, revealed that the inner revetment of the Turkish ramparts south of Bab al-Zanata consisted of an earlier

399.

Gaz. AA. Pea (cont.)

medieval wall, flanked by cutwater-shaped bastions, which had become buried inside the rampart. A stretch of this wall immediately south of the gate was faced on the inside with irregular 45 cm. courses of ashlar masonry (_!, 229; fig. 1$ Q). To the north of the gate, the early wall did not follow the course of the Turkish wall, but instead continued in a north-easterly direction to the sea (l, pi. Villa; 2, fig. 2).
In the absence of any record of stratified material found assoc-
iated with this wall, attempts to date it can be no more than hypothet-ical. The masonry technique of the wall south of Bab al-Zanata led Aurigemma to suggest the possibility of a Byzantine date for it (_!, 229); but as Lezine points out, it could as easily be Muslim (]_, 57). The cutwater-shaped bastions appear ifrom their construction to be later medieval in date, despite the fact that similarly shaped towers of
the sixth and seventh seventh centuries are known elsewhere (Ch. IV. 5? 300-301); and the discovery of antique spolia built into the base of Bab al-Zanata (_2, 376-377) provides in itself no proof that the wall rested on Byzantine foundations. None of these considerations, however, has prevented Aurigemma suggesting that the Byzantine wall may have been built on the same line as the Roman wall (JL, 225), and Lezine
that the eighth-century walls were built on top of the Byzantine walls,
Q

which he suggests may or may not have been completely rased by Amr
(1.9 57). Some idea of the plausibility of these theories may be ob-tained by considering the size of the town that such a wall would have enclosed. After compensation is made for the effects of marine erosion, the figure of 50/55 ha. that is obtained (7.» 575 62) is far in excess of the area covered by any other Byzantine walled town in Africa apart from Carthage itself. For this reason it would seem unwise to attempt to push the date of the wall back any further in time than the eighth century; indeed, it is even possible that the wall enclosed within the Turkish rampart represented the wall of 1215/16, and that the eighth-century wall, like its Byzantine predecessor, enclosed a much smaller area around the harbour. If this were to have been the case, then all trace of it would subsequently have been lost beneath the closely packed buildings of the medina, and it is hardly surprising that no part of it has survived.

401.

Gaz. AA. Rusguniae (cont.)

escarpment, the trace of the enceinte is somewhat hypothetical. Al-Idrisi's description of Tamentfoust suggests that the wall was already "badly ruined by the twelfth century, when the inhabitants of Algiers used the site as a quarry for ready-dressed building stone. The date of the wall is also unknown. Excavations in 1964 revealed evidence for post-Roman and early Muslim, or Berber, occupation of the south-eastern bath complex (Query 1965).

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See Gaz. CB, Inscr. 45-48.
Map 3, no. 59.
Figure 36.
Plate XXVIIb.

SABRATHA

Marsa Zuaga (12°30'E 32°48'N) Town wall

Procopius writes in de Aedificiis that Justinian walled the city of Sabratha, in which he built a very noteworthy church. The walls were still standing over a century later when, in _c. 643, immediately after
Q

the fall of Tripoli (Pea), the town was taken by the troops of Amr
Q

Ibn fcl- Asi. The inhabitants of the town were taken so much by surprise that they did not even have time to close the gate of the city which

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they had left open to allow their flocks out to graze (Ibn Abd al-Hakam; Ibn al-Athir; al-Tijarii).
Sabratha lies on the coast of Tripolitania, about 65 km. west of Tripoli. Both the church and the wall mentioned by Procopius have been identified archaeologically, though the latter is still largely covered by the sand that has invaded the site. The Byzantine wall has been

402.

Gaz. AA. Sabratha (cont.)

traced for some 740 m -j and encloses the landward side of an area of 8.5-9.0 ha., representing the nucleus of the Roman city and including Justinian's church (cf. Fig. 28). Evidence for coastal erosion (l8), however, suggests that the original area was somewhat larger, though
it is not certain whether the defences extended along the sea front at any period. There seems little reason to accept the view that Justin-ian merely "restored and strengthened the Roman walls ... to a relatively limited extent" (14; cf. _2; 12). Bartoccini's plan of 192? shows an earlier wall some 460-470 m. in advance of the Byzantine east wall, and it seems likely to have been this wall, if any at all, that was demol-ished by the Vandals in the mid-5th century. It is perfectly possible, however, as Bartoccini suggests (I, 19), that on the west side, where the wall is still covered by sand, the Justinianic wall followed the course of an existing Roman one. It may be noted that the wall in this sector appears to have a zig-zag trace. Elsewhere, the wall is clearly of one build, and a sixth-century date for it seems more than likely (_4). Excavations in 194& on the south-east part of the wall, where it borders the north side of a Roman street running east-west (ie. between _e and Jb), demonstrated that the houses in this area had already fallen into ruins and that the street had become blocked with rubble before the wall was built. 'All that Justinian's engineers had to do was to build upon them [ie. the house walls bordering the street], and to level off the debris to make a clear space against the inner face' (JL6). As at Lepcis, the walls are built of reused blocks of stone, in this case a soft sand-stone, with no rubble core. They are about 2.20 m. thick, with found-ations 2.60 m. thick (PI. XXIVb).
The south gate (cf. _5; _6) is represented by a pair of solid found-ation piers, constructed of sandstone blocks and surviving in the east one to four and in the west one to two courses above sixth-century ground level. They flank an entrance passage 3.00 m. wide. The piers measure 4.15 x 6.05 m.> and project 2.30 m. from the curtain wall.
The gate itself was apparently set 49 cm. back from the outer face of the piers. At this point, the sidas of the passage are rebated by
11 cm., and a limestone threshold slab survives in situ. The position of the gate implies that the two piers represent the foundations for a

403.

Gaz. AA. Sabratha (cont.)

single gatehouse, rather than a pair of towers flanking a recessed gateway such as can be seen, for example, at Lepcis. A second thres-hold slab, of cipollino, worn away in the middle, set 2.05 m. behind the first, could perhaps be interpreted as representing the position
of an inner gate; it seems more likely, however, that, if it is indeed in situ, it was intended to act as a step to prevent the erosion of the roadway which slopes down towards the north. Both thresholds are some 75 cm. above the level of the paved Roman street. In a secondary phase, after the street level had risen another few centimetres, an outer gate was added. This was set between two piers, 1.30 m. thick and projecting 2.80-2.90 m., which butted against the outer face of the earlier gate-house. The new gate was set 47 cm. back from the outer face of this forebuilding, and had a threshold formed from a split cipollino column, which survives in situ. The addition of a forebuilding to the original gatehouse, which is of a type unique in sixth -century Africa, suggests that it had been found to be unsatisfactory, possibly because its single gate made it too vulnerable to attack (Fig, 7; PI. XXVIa-XXVTIa),
The east gate (_a) appears to be of roughly the same shape as the
south gate, though it has yet to be excavated. On the south-east, a 4.35 m » gap (b_) in the wall may represent the position of another gate-way, (in recent times, two breaches, _e and f_, have been effected to allow for easier access by archaeologists and visitors). Traces of a tower measuring 4-35 m « across (east-west), and having a lateral entrance passage, can be seen at the south-west corner of the enceinte (d). Wo doubt others will come to light in the course of further excavation.

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124-126.

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406.

Gaz. AA.
SICCA VENERIA

El-Kef (8°43'E 36°11'N) Town wall and ?fort.

According to Procopius, Sicca Veneria was one of the cities in Ivumidia that was fortified by Justinian. The see of the episcopus Sisicensis, mentioned in 646, is probably to be identified with the town.
The site of ancient and modern el-Kef is shaped like a vast amphi-theatre formed by the south-western end of the Dir el-Kef, which is one of the mountain ranges lying between the valleys of the Oued Mellegue and the Oued Tessa in the northern part of the Tunisian Tell. Set at an altitude of 700-850 m., the town surveys the plateau of Araguib Kamra to the south. In Roman times, it occupied an important position on the Carthage to Gonstantina road, and was linked to Bulla Hegia and Thabraca in the north, and with Laribus in the south-east.
A continuous history of fortification, from Numidian times down to
the French occupation in 1881, makes the interpretation of el-Kef's defences somewhat complex. The situation is made no easier by the fact that the qasba, which dominates the town, is still a military zone and therefore a prohibited area, while much of what remains of the town wall is inaccessible on account of the modern buildings which surround it.
It is apparent even from a distance, however, that the Turkish qasba of 1679 (_12)> which stands on the south-western edge of the plateau over-looking the town, incorporates an earlier rectangular fort, which is flanked by square bastions and faced with large ashlar blocks. A Byzan-tine origin for this part of the fortress seems quite possible, although by no means certain.
Other possible Byzantine elements can be detected in the town walls.
In 1882, Cagnat described the remains of two stretches of wall, built of large ashlar blocks, one of which was flanked by a bastion. The photo-graph which accompanies his description illustrates a rectangular bastion, associated with a wall enclosing the western side of the town below the qasba; its construction, like that of the wall, is typically Byzantine. Although Diehl wrote in 1896 that nothing then remained of the Byzantine wall, part of Cagnat's wall does in fact still survive; it runs downhill from the south-east corner of the qasba, before losing itself amongst

408.

Gaz. AA. Sitifis (cont.)

Procopius mentions the construction of town defences at Sitifis and
an inscription suggests that Solomon was responsible for them. The town walls of Setif were dismantled by the Katama followers of Abu
Fahm in jQQ (al-Bakrl; Istibsar); however, these defences were probably not the Byzantine ones, which were still intact at the time of the French occupation. The construction of barracks on the site by the French, in the second half of the nineteenth century, entailed the destruction of two-fifths of the Byzantine fort and the modification of the rest by the addition of a chemin de ronde provided with rifle-loops.
Sitifis lies at an altitude of 1,096 m. in the Higti Plains north of
the mountains of the Hodna, and is separated from the sea by the range of the Petite Kabylie. Its Byzantine defences consisted of a rectangu-lar fort, measuring internally 10? x 158 m. (1.69 ha.) and flanked by eleven rectangular towers. The fort, which apparently enclosed the forum area of the Roman town (10, 9)> is sited on gently sloping ground, with the result that the lower (south) wall acts as a terrace wall for part of the interior. Although it has been partly rebuilt, it is possible to distinguish the sectors of this wall that were built by dif-ferent working parties by the different arrangement of the weep-holes in the masonry (Pl.XXIXh). Plans made by Ravoisie and de la Mare before the French refurbishment show that the towers were deployed as follows: one at each corner, one on each of the shorter sides (east and west), three on the north and two on the south.
Of the surviving towers, three (ja, _c and _d) are 10 m. square, while Tower b measures 13 m. across and projects 8 m. In Towers _a and ID, the upper floors were carried on stone corbels (_4). The position of the main gate of the fort is uncertain. Possibly it was on the north, where the towers are more closely spaced. A blocked postern (_!) sur-vives just south of Tower b on the west; it is covered by a lintel and relieving arch. Diehl records two other posterns on the south wall
(m and n); no trace of these remains today, however, and the widths that Diehl accords them (2.60 and 3.80 m. respectively) seem somewhat large for posterns. Diehl's plan also shows a stairway leading to the rampart walk in the south-west corner of the fort. Gsell noted that the

410.

Gaz. AA.
SVFES

Sbiba (Hr.) (9°05'E 35°33'N) Fort and town wall

Part of an inscription bearing the name of the empress Theodora suggests that the fortification of Sufes dates to the reign of Justinian, in all probability to one of the two periods when Solomon was prefect and magister militurn and certainly to before 548. The town is also men-tioned by George of Cyprus.
Sufes lies on the south-eastern edge of the Tunisian Dorsal in
the valley of the Oued Rohia, better known as the Oued el-Hathob, which serves as a line of communication running north-south linking the steppe region around Sufetula with the Tell region to the north. The Byzantine town occupied a knoll on the west side of the valley, overlooking the plain of Rohia. Sufes was linked by road with Sufetula to the south, with Ammaedara to the west, with Thugga Terebentina and Mactaris to the north and with *Mamma and Hadrumentum to the east.
Little of the Roman town remains to be seen above ground today, and
even in the last century the site was considered one of the least spect-acular in North Africa. Guerin noted the remains of an enceinte, which he estimated to be some 6 km. in length. Graham and Ashbee, however, saw nothing recognisable above ground apart from part of a public baths complex, which still exists a short distance to the south-west of the main site. The most detailed investigation of the Byzantine structures remains that of Diehl, carried out at the end of the nineteenth century. A depression, running along the northern scarp of the site and rep-resenting the robber-trench of the north wall, shows how much the area has suffered from stone-looting during this century. Diehl, however, was able to recover the plan of a rectangular fort, which measured 30 x 41 m. internally (0.12 ha.) and was flanked by four corner towers. Its walls were 2.40 m. thick and constructed of a core of rubble, faced with large ashlar blocks. The si z e of the towers is not stated, though it appears from Diehl's plan that they were about 4 x 6 m. and probably had lateral entrance passages. The position of the gate is unknown.
The fort occupied the north-western corner of a larger enceinte,
which extended about 190 m. (east-west) x 110 m. (north-south), enclosing

412.

Gaz. AA. Thabraca (cont.)
of the Oued el-Kebir where it meets the sea. Behind the town rise the high mountains of the Kroumirie. The commercial importance of Thabraca as a port in the first three centuries A.D. is amply demon-strated by the network of roads which radiates from it; eastward and westward to Hippo Diarrhytus and Hippo Regius respectively, southward to Simitthu, Bulla Regia and the towns of the upper Medjerda valley and Numidia, and south-eastward to Vaga and the towns of the middle Medjerda.
Apart from some traces of a possible town wall seen in 1883, north-west of the Bo^dj-Djerid fort near the sea, no archaeological evidence for Byzantine fortifications has yet come to light (_4). The existence of an imperial arms depot and a staging post for the cur,sus publicus, however, makes good sense in view of the town's important strategic position. It would also imply the existence of fortifications of some kind in the Byzantine period.

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See Gaz. CB, .Inscr. 56.
Map 3, no. 61.

THAGVRA

Taoura, formerly Gambetta. (8°02'E 36°11'N) Fort

Two inscriptions found in the vicinity of the Byzantine fort suggest that it was built under Justinian and Theodora, in all likelihood on the authority of the prefect and magister militurn Solomon. A bronze stamp, intended for marking leather, textiles or other such products, and bearing the letters Te^XXou (of Gemellus), was found in the fort in the 1930s (_6).

413.

Gaz. AA. Thagura (cont.)

Thagura lies 26 km. (by modern road) south-east of Souk-Ahras.
The fort is set on the summit of an isolated hill, with steep slopes
on all but the south-east side (PI. XXXIa). To the south-west it com-municated with the cereal-producing area around Tipasa (Tifech) and Madauros, while to the north-west a road led through the mountains to Thagaste (Souk-Ahras), and two others joined the main Carthage-Gonstan-tina road to the north and north-east. A cistern lying near to the fort was supplied with water by means of a conduit from the A'in Guettar,
1.5 km. to the south-east (_9).
The fort is shaped like an irregular hexagon, measuring internally
about 100 m. (north-south) x 65 m. (east-west). The area enclosed is about 0.53 ha. The best preserved stretch of wall is on the east and south-east, corresponding to the weakest part of the site. In the mid-nineteenth century, the walls stood 8 to 11 m. high (_9) > and at the end of the century about 6 m. (_5). Today, if one disregards the towers, they barely attain 4 m « at the most. Although much of the facing has now fallen away, the walls were originally 2.20 m. thick, and built with a core of rubble and a good creamy-white mortar, faced with ashlar blocks bonded into the core by means of headers (Pl» XXXIb), A great quantity
of architectural fragments are still to be seen built into the walls. Owing to the slope of the hill, the inner face of the wall is now earth-fast on the east and south-east. On the south-west, however, it has been cleared quite recently, but on the north and north-west sides the wall is harder to follow. It was even suggested by Gsell that no wall was necessary here on account of the natural defences provided by the vertical drop. However, traces of the same creamy mortar and a shallow foundation trench cut into the rock are still visible in places, suggest-ing that the wall was continuous on all sides.
Lewal recorded three towers in a good state of repair on the north
side and two less well preserved ones on the south. Today only the southern two survive, although the foundation of a structure at _c, measuring 5.40 m. across, probably relates to another. Tower _b measured about 10.60 m. x 8.20 m. It was open-gorge, though the presence of two wall abutments suggests that the back was covered by an arch to support

415.

Gaz. AA. Thamugadi (cont.)

this century, of three identically worded inscriptions, which appear to have come from three of the four gates of the fort. These record the reconstruction of the cibitas Tamogadiensis by the patrician Solomon in the thirteenth year of Justinian's reign (1 April 539- 1 April 540). The area around Thamugadi had been reoccupied by the Byzantine forces of Solomon during the summer of 539 when he undertook his second cam-paign against the Moors of the Aures. Thamugadi would thus seem to have been one of the forts built and garrisoned in the region by the Byzantines after the successful conclusion of the campaign (see Ch. II. 4: 59-62). The last reference to a Byzantine military presence in Tham-ugadi is made in an inscription, found in the large late Roman and Byzan-tine necropolis which extends over a hillside south of the fort; the inscription records the dedication of a chapel by the dux de Tigisi, John the Armenian, during the reign of Constans II and the exarchate of Gregory (642-64?).
Thamugadi lies at an altitude of 1,070 m. on the edge of a fertile plain extending north of the Aurxes (for discussion of Procopius's geo-graphical description of the region, see Desanges 1963). The town was therefore well placed to draw on the economic resources of both the plain and the mountains to the south. It strategic importance had also been recognized since its foundation as a colonia by Trajan. In the sixth century, roads linked it to the east with Mascula, Bagai and Theueste, to the west with Lambaesis and Tubunae and to the north with Constantina. The fort itself lies about 600 m. due south of the town forum. Although the ground rises south of the town, it was not this consideration which led to the choice of the site, but the existence of a spring, the Aqua Septimiana Felix, the third-century piscina of which (measuring 27 x 7 x 1.70 m. deep) formed an integral part of the fort's internal layout (Fig. 2)
The history of the fort's investigation in modern times began a
century ago with the visit to the site of Lt.-Col. Playfair. An account of the structures visible in 1893 was published by Diehl and was followed by other descriptions written by Ballu (2_) and Gsell(_20). The most recent discussion, which also takes account of the excavations carried

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Gaz. AA. Thamugadi (cont.)

out this century, is by Lassus (27; 30)
The Byzantine fort at Thamugadi is almost unique amongst the Byzan-tine fortifications of Africa in that excavation has enabled the major part of its interior layout to be planned and studied (see Ch. III. 4: 171-177)• Excavation of the fort began in 1910 when A. Ballu dug three trial trenches across its interior and claimed, curiously, to have found 'absolutely nothing' (_4). A more extensive programme of excavations was initiated in 1939 by E. Albertini and L. Leschi. This was contin-ued after Albertini's death, in 1941? by C. Godet, and by the time of Godet's own death in 1945 ~t ne chapel, baths and part of the barracks had been brought to light (_3§). Two years later, Leschi published an account of the Aqua Septimiana Felix (_37_). Under the direction of R. Godet, the son of the previous director, excavation continued through the late 1940s and early 1950s, until R. Godet's untimely death in 1954 brought them to a halt. During this period, work had included the excavation of the north gate (39) an^- continued study of the baths (33; 34); the work of restoration and consolidation that accompanied the excavation had included the diversion of the wadi that threatened the southern part of the fort (42) and the complete dismantling and rebuild-ing of the north-west corner tower (1950-53) in the cause of epigraphic study (_33). From 1956 to 19&2, the excavations were directed by S. Tourrenc. A small Berber settlement still occupied the centre of the fort in the early 1950s (10; 33); but by 1958 the whole of the inter-ior was finally cleared for photography (24; 25). The task of pre-paring the definitive publication of the Byzantine structures now rests in the capable hands of prof. Jean Lassus (Aix-en-Provence).
The fort is rectangular, measuring internally 111.25 x 67-50 m.
and enclosing 0.75 ha (11, 310). Its sides and corners are flanked by a total of eight rectangular towers, of which the one occupying the centre of the north wall contains the main gateway (b_). The walls, between 2.40 and 2.70 m. thick (average 2.50 m.), rest on a foundation offset by 0.30-0.40 m. and stand in places to over 15 m. They are built with two faces of ashlar, comprising reused material, enclosing a rubble core. No trace of lime mortar has been found on the exposed

417.

Gaz. AA. Thamugadi (cont.)

sections of the core; it is difficult to believe, however, that it was bonded simply by earth (see Ch. IV. 2:259-260).
The corner towers measure 6.25 * 7.35 m. (_a, _i), 7.25 x 7.30 m.
(_c) and 7.10 x 5»&5 m. (_f) . They are entered by diagonal passages, 0.95 m. wide, which narrow to 0.65 m. towards the inside of the tower (11, 312). The interval towers measure between 7.20 (_k, _d) and 4.75 m. (_g); their entrance-passages are 0.65 m » wide. All the towers have walls between 1.70 and 2.00 m. thick, and had at least two storeys. Entry to the upper floors was probably only possible by means of the rampart-walk or an external stair, since the surviving floors in Towers _d and _k suggest that there was no internal communication between the ground and first floors. In Tower _d, the first floor now consists of a crudely built stone cupola, resting on the beginnings of a low brick cupola carried on stone squinches bonded into the wall (11, 313; 44) (Plate XLIa); the remains of a similar brick cupola can also be seen in Tower _k. It seems quite likely, however, that the stone corbelling in Tower _d represents a later insertion of post-Byzantine date and that the towers were all originally provided with brick floors carried on stone squinches. In some towers, the ground floors were lit by internally-splayed slits; in profile, these plunged downward on the inside, suggesting that they were intended for no other purpose than lighting. It may also be noted that not all the towers are properly bonded into their adjacent curtain walls; this would imply not only that the fort was built by different working parties, but also that the work proceeded at different rates in different parts of the fort (29, 465).
The main gateway, which is of the gate-tower type, stands on the
north facing the Roman town (_b). It measures 9«40 m. across and pro-jects 6.55 m. from the wall of the fort (Fig. 6). The entrance-passage was closed by an inner and an outer gate, 3.40 and 3.20 m. wide respec-tively and set 7.50 m. apart. The outer one was closed by means of a portcullis, which slotted into a groove, about 15 cm. wide, which is clearly visible on the lower four courses of the gateway (PI. XXXVIlib). The rebated inner gate was evidently closed by means of two wing-doors,

418.

Gaz. AA. Thamugadi (cont.)

which opened inwards and were secured when shut by a wooden draw-bar, which fitted into a slot (20 x 20 cm.) in the sides of the entrance-way: (PI. XXXVIIIa). One of the three inscriptions from the fort (Gaz. CB, Inscr. 27) was probably set over one of these gates. Voids in the side-walls of the gate-tower were at one time interpreted as entrances for pedestrians (11, 313). The excavations by R. Godet, however, showed that the eastern one was in effect a gallery, about 2.0 m. above ground level, and was reached by a stone stair set inside the wall; in reporting this discovery, Leschi suggested that it might have been used as a command post from which orders could have been given for operating the portcullis (39)
Each of the remaining sides of the fort was provided with its own postern gate. The southern gate (h), flanked by Tower _g, was 1.00 m. wide, opening to 1.25 towards the inside (ll, 313). Postern _e_, on the east, had subsequently been blocked and was faced by a third on the west (_j). The fact that the internal structures of the fort respect two
of these suggests that they were not blocked up before the internal buil-dings had been completed.
In view of the thickness of its walls (average 2.50 m.), internal arcading to carry the rampart-walk was not necessary at Thamugadi. Arcading was used, however, to carry the staircase to the rampart-walk just inside and to the east of the main gate. There is a second stair to the rampart walk facing this one on the south. One curious feature of the walls is a pair of recesses in the east and west walls, in each case just north of the postern gates in the same walls. The one on the west, which is intact, runs almost the complete height of the wall and is covered by a shouldered arch; both are 2.40 m. wide and 1.00 m. deep. Lassus suggests that these may have been used as shafts up which the blocks of stone may have been hoisted during building (27, &5> 29, 466); for this, however, there is no independent evidence. Another feature on the inner face of the surviving walls is the occurrence on them at regular intervals of vertical lines of protruding blocks of stone. The most obvious explanation for these is that they were intended for bonding the internal structures of the fort onto after the curtain wall had been built. The internal structures that survive, however, make no use of

419.

Gaz. AA. Thamugadi (cont.)

them and are on somewhat different alignments (PI. XXXVb). It would appear, therefore, that a change of plan occurred before the internal
structures were ever built.
The interior of the fort was divided into two parts by a street
which ran from the main north gate (_b) to the south postern (_h). To the west of it lay the headquarters and service area. This included
a small brick-built chapel (18 x 10.8 m. overall), built to a basilican plan, with a narthex, three asiles and a semi-circular apse with flanking annexes, one of them a baptistery; the altar, which stood in front of the apse, was covered by a ciborium and concealed a reliquary deposit (17; 29) 469-471; 36). The other structures in the western part of the fort included a bath-building (overall 15.50 x 11.50 m.), also built of brick (29, 468-469), a cistern converted from the earlier piscina, and a group of structures inside the north-western corner of the fort interpreted as store-houses, latrines and kitchens (29, 467-468). The commander's house and headquarters building probably occupied the area between the chapel and the bath-house, while some of the barrack-like buildings west of it may have been intended for his personal body-guard of elite troops. Much of the Byzantine masonry in the western part of the fort was unfortunately removed during the investigation of the Roman sanctuary buildings associated with the spring without adequate records being made of them.
In the eastern part of the fort, a more regular arrangement of barrack-buildings betrays the quarters of the troops themselves. Al-though these buildings now stand no more than about 3.0 m. high, it is clear that they once had at least two and, in the case of those built against the walls of the fort, possibly even three storeys. Most had first-floor balconies, supported on stone pillars and reached by means of stone and probably wooden stairs. The barracks were arranged in eight rows comprising eleven contubernia in each. All except perhaps one of the rows were preceded by a verandah, 1.80-2.00 m. wide, running its entire length, from which the individual rooms opened. The chambers themselves measured 3.8/5.0 x 2.5/3.5 ft. at ground-floor level. The ground floors were in most cases lower than the level of the street

421.

Gaz. AA.
THELEPTE

Medinet el-Kedima (8°36'E 34°58'N) Town wall

A constitution of 534 made provision for Thelepte, together with Capsa, to become one of the headquarters of the dux Byzacenae prouinciae. Frocopius records the construction of a city wall and the stationing of a garrison of troops there under Justinian. The town is later men-tioned by George of Cyprus, and the bishop Stephanus Talaptensis atten-ded the council of Byzacium in 646.
Thelepte lies almost midway between Theueste and Capsa, and was
linked by road with Cillium and Sufetula in the north-east, and with Negrine (Niciuibus) and ad Maiores in the south-west. The prosperity of the late Roman town had been based, like that of Sufetula, on the oil of the region; its ruins cover an area some kilometres square. The Byzantine wall occupies a raised position on the left bank of the Oued bou Haya and encloses an elongated rectangle, 350 x 150 m » (5-25 ha.). The line of the walls appears to have been determined-partly by the lie of the land and partly by the layout of the pre-existing street grid; there is also reason to suppose, from the architectural remains that survive, that the area enclosed was the forum area of the late Roman town. Although the line of the walls is still clearly visi-ble, they were already in a very ruinous state by the middle of the last century (_6; ll)j the recent laying of a water-pipe down the whole length of the eastern part of the walled area has done nothing to assist its preservation for future research.
The walls were built of large reused blocks of stone, following
the usual sixth-century practice, with two facings of ashlar bonded into a concrete core by means of headers (Pedoya's idea that metal cramps were used is certainly erroneous and was probably inspired by the large number of reused blocks derived from earlier buildings such as temples). The thickness of the wall varies from 1.50 m. on the north to 2.20 m. on the east. Diehl's plan shows twelve projecting towers and a redoubt (ri), built into the south-west corner. The walls of the redoubt are still visible; it measures 43 x 16 m. (]_} and occupies the highest point of the defended area; Diehl identifies it as a church, but excavation would be needed to ascertain its true character.

422.

Gaz. AA. Thelepte (cont.)

Of the towers, one stands at each of the four corners, three flank each of the long sides (east and west) and two flank the south side; the absence of towers from the plan of the north wall may be due simply to their failure to survive above ground level. The corner towers were all apparently circular in plan and built on square foundations. One of the better preserved of these, Tower _b (Fig. 6), had an internal diameter of 4.80 m. and rested on a foundation measuring 7.50 x 7-50 m. Its walls were 1.35 ra « thick and it was entered by a diagonal passage; only about one eighth of its circumference was engaged in the enceinte (cf. Ammaedara, Tower _c). Towers _a and i_ were similar, the internal diameter of _i being 6.40 m. (]_}. The plan of Tower f, however, differed from the others. Liehl describes it as rectangular, measuring exter-nally 10.35 x 9«40 m., with walls 1.95 m « thick. Such dimentions are supported by Pedoya's somewhat schematic plan; but Pecloya also shows a circular tower in the same position without, however, explaining the Relationship of the two. The foundations of a circular tower indeed survive today, but in too excentric a position to have been of much value in providing flanking cover for the east wall. One possible explanation is therefore that the rectangular tower replaced an earlier circular tower which had been incorrectly sited (cf. Idscoduratera in northern Bulgaria; Hoddinott 1975? fig- 6l); however, the matter can only be resolved by excavation.
Diehl gives the dimensions of the remaining towers as follows (_7):
_c, _d and e, 6.60 x 5.00 m. with walls 1.50 m. thick; jg, about 10 rn. across, projecting 8.0 m.; _h and _j, 6.60 x 5.00 m.; k, 11.50 x 11.50 m.; j., 6.50 x 5.00 m. , with walls 1.25 m. thick.
Pedoya claimed that six gateways and a postern near Tower jb gave access to the town. Eight gates are marked on his plan, but one of these appears to have been the entrance to a tower (_d); furthermore, the fact that a number of Pedoya's other gateways also occupy the most exposed parts of the wall suggests that they too may simply represent the position of towers that have disappeared. Diehl failed to locate any of the gates seen by Pedoya. Instead he recorded a bent entrance, which Pedoya did not see, in Tower _k; this, he suggested, was the main

425.

Gaz. AA. Theueste (cont.)

garrison had occupied the north-west corner of the enceinte; this explains the existence of casemates and a ramp for artillery associated with Tower _! Some other repairs and alterations are probably medieval in date; al-Bakri states for instance that part of the wall was des-troyed by Abu Yazid (934). The French military zone was established in the south-west quarter of the enceinte and was subsequently extended southward beyond the walls. Around the rest of the enceinte the height of the walls was reduced, and in places rebuilt, and a continuous ram-part-walk was provided by demolishing the inner facing and core of the Byzantine wall while leaving the outer facing standing to serve as a parapet through which gun loops were opened. The towers were also modified, but were not reduced in height; thus, steps up to the level of the Byzantine rampart-walk had to be provided at the junction between each tower and the curtain wall. In the 1950s> part of the west wall was demolished; but plans to deal in like manner with the north wall on either side of the Arch of Caracalla fortunately never materialized (l8). The wall was between 2.00 and 2.10 m. thick and stood to a height
of between 9 an(i 10 m » It was built with two ashlar faces bonded into a rubble concrete core by means of headers. Although built de nouo,
in places the walls made use of existing structures, as for example between Towers _e and _f where the piers behind the scena of the Roman theatre were probably used to carry internal arcading (this was modified in 1886: £, 3 28 » 21, 121-122). Elsewhere, however, the wall-walk, which ran round the whole enceinte at a height of between 7 and 8 m. above ground level, was carried partly on corbels. It was 1.25 m.
wide and corbelled out on the inside by 0.75 m -> leaving enough room
for a parapet 1.50 m. thick (21, 136). Stone steps leading up to it are found next to each of the gates and between Towers _a and JD. Whether or not there existed crenellation, and of what type, is uncertain. Maitrot, who had access to the plans of the French army engineers, records the existence in his time of merlons rising 2.00 m. above the rampart-walk, with a parapet of 50 cm « between each pair. However, as he explains, 'il est bien hazardeux de les considerer comme byzantine, ^' ^' car dans la partie qui a ete refaite incontestib]Jment par le Genie et d' apres les plans memes de ce service, on retrouve les memes creneaux 1

426.

Gaz. AA. Theueste (cont.)

(21, 138-139). The matter is therefore unresolved, though it seems possible at least that the rampart walk was intended for no other pur-pose than that of moving troops from one tower to another and not as a fighting platform. Evidence of a negative kind which might support this theory is the absence of anything resembling a merlon from the perspective drawings made by Sgt. Lardy in 1846 before the rebuilding (20, pi. 70, fig. 5).
The enceinte was flanked by fifteen towers, spaced no more than
95 m. apart. Their dimensions vary, but whereas the corner towers are all rectangular in shape, with lateral entrance passages (right-hand, Towers _a, _d and _h; left-hand, _1), the others are squarer. One of these, Tower k:, was surveyed by Maitrot (21, 136-139), but although the tower is still standing some of the details observed when the survey was made have now disappeared (Fig. 3). The tower measured 8.50 m. across and projected 6.50 m. Like the town wall at this point, its walls were 2.0 m. thick. The lower storey was entered through a door which Maitrot gives as 4.0 m. high. A general rise of 1.80 m. in ground level in this area since the sixth century, however, implies that the door may have been subsequently rebuilt at a higher level; a more reasonable height for the original door would therefore be 2.0 m.,
which seems to be the module in use on the other towers. This led into a room 4»55 x 4-55 m » an^ about 7-50 m - high, enclosed by a groin-vault supported on corner pilasters 50 cm. square. Lighting was provided by a window in the inner wall, 50 cm » high (70 cm. on other towers), set 5.70 m. above ground level. The first floor, at 7-55 m « above ground level, was accessible only from the rampart-walk, there being no internal communication with the lower storey. At this level the inner-facing wall of the tower narrowed to 1.50 m. to allow room for the corbelled rampart-walk to pass. The door to the first storey was 1.60 m. high and 0.80 m. wide, and led into a room similar in virtually all respects to the ground floor room, save that its height was 1.0 m. less and that the window in its inner wall was 1.20 m. high. The topmost floor of the tower represented the fighting platform. It was set some 14 m. above ground level, and the parapet, though standing to a maximum of only 1.10 m. when Maitrot surveyed it, would probably have taken the

427.

Gaz. AA. Theueste (cont.)

total height of the tower up to 16 m. Access to the up^.er floor was only possible by means of an external stone staircase, corbelled out from the inner-facing wall of the tower and the adjacent curtain wall parapet, which was probably heightened at this point; however, French modifications seem to have removed all trace of such stairs in Theueste. Traces do survive, however, of the corbelled chambers which Maitrot describes set in the angles between the sides of each tower and the curtain wall (viz. Towers _d, _e, _f and k). These were 1.10-1.20 m. square and were entered from the rampart-walk through a doorway, 80 cm. wide and 2.0 m. high. Their purpose may have been to act as observa-tion posts, covering the wall of the tower and the adjacent curtain; more plausibly, however, they may be interpreted as latrines, similar
to those added to the walls of Rome in the reign of Maxentius (see Ch. IV. 7: 316-317).
Three original gateways are recorded. The south gate, Bab A'in
Cheta,is now inside the military zone just west of Tower _f|. it was
2.20 m. wide, 3.30 m. high and arched. The gate-tower built around the Arch of Caracalla (n.) was dismantled in 1863 to make the town more easily accessible to traffic and to reveal the Roman architecture of the arch. Drawings by Sgt.Lardy (_20), however, and the plans of de la Mare (20) and Moll (22) show very clearly how the quadrifons was transformed into a gate-tower with a recessed outer entrance, 2.30 m. wide and 4*50 m. high, covered by a lintel (Fig. 6). The whole arch was encased in masonry and the rampart walk had to be raised two metres at this point in order to pass over the top of it. Two flights of steps either side of the gate on the inside of the town wall led from ground level up to the rampart walk and thence to the fighting platform over the gateway. At an unknown date perhaps after the Byzantine period, the original Roman stone beam roof of the quadrifrons collapsed, or was destroyed, and was replaced with a dome carried on squinches, only one of which survives

(i).
The main gate to the town, the so-called Porte de Solomon (_c), was
on the west. The entrance consisted of a vaulted passage, 5*65 m. long preceded by an arched gateway 2.80 m. wide and 3.40 m. high, set

428.

Gaz. AA. Theueste (cont.)
between two projecting towers (21, 139) The towers were 7.35 m. "broad and 4*80 m. deep. Before the French modifications to them, they had stood about 16 m. high and had the same general features as Tower k, except that the floors (at 7.30 m. and 13.80 m.) were barrel-vaulted and the ground-floor chambers appeared to have had no door or window in the inner-facing wall; instead, they seem to have been acces-sible only from the entrance passage, and may therefore be interpreted as guard chambers. It seems -that a double system for barring the entrance was employed. The outer barrier was probably of wood, and the restricted space within the entrance-passage suggests that it would probably have consisted of a pair of wing-doors. The inner barrier, however, consisted of a portcullis, the slot for which, though now blocked by stone and brick, survives at the inner end of the passage in the arch supporting the .line of the town wall. The portcullis would have been operated from a mezzanine chamber set between the towers over the entrance-passage. Although a chamber still exists in this position, however, its character has been greatly altered by the French engineers; the modifications even include a series of machicolations corbelled out from the face of the gateway, above the entrance;, that they date from the end of the nineteenth or early in the twentieth century is proven by the fact that they are plainly absent from the photograph of the gate published by Diehl (1896), but are to be seen in the one published by Gsell (1901) (jsf. Fig. 7$ PI. XLIIIa-b).
Traces of an outer enceinte, extending north, east and south-east
of the Byzantine enceinte and enclosing between 45 an<l 50 hectares, were planned in 1853 (22, pi. II) It appears to have been flanked by rectangular towers; its length alone, however, makes it seem unlikely that this was an official Byzantine work, and rather than see it, as Moll suggested (23, 215-216), as a late sixth-century addition to the enceinte already described, it could perhaps more plausibly be inter-preted as a third- or fourth-century work such as has been found at Sitifis. Possibly it was kept in some sort of repair by the local pop-ulation through the succeeding centuries. However, in the absence of a more recent archaeological survey of the wall and of the numerous for-tified buildings that it seems to have enclosed, such a view can only be

430.

Gaz. AA.
THVBVRSICV BVRE

Teboursouk (9°16'E 36°28'N) Citadel

The defences of Thubursicu Bure may be dated by an inscription set over their north gate to the reign of Justin II and Sophia and the prefecture of Thomas (Gaz. CB, Inscr. 29). Insce the text makes no reference to Tiberius as Caesar, it would seem likely to date from Thomas's first prefecture, allowing its date to be fixed between 565 and 568/569. Thubursicu Bure lay in the province of Carthago Proconsularis, a
short distance north of the main Carthage to Theueste road and within fifteen kilometres of Tignica, Thugga and Agbia. The town is situated, at an altitude of around 500 m. on the eastern-facing slope of the Djebel Goraa, overlooking the valley of the Oued Kralled? and on the east side of the Oued Souani, a tributary to it. The Byzantine wall describes
a roughly shaped pentagon and encloses 1.76 ha. It is now mostly obscu-red by buildings of more recent date and is difficult to follow except on the north and east, where it has also recently been restored. The south wall had already been mostly destroyed when Diehl described the site in 1893. The east wall incorporates part of a Eoman bath complex. Roman fountains may still be seen within the enceinte, fed from a natural spring.
The wall is 2.40 m. thick and built of reused material. It stands
in places to between 7 and 8 m. in height. The towers and the lower parts of the curtain walls are built in the usual sixth-century manner, with an external facing of large ashlar blocks. Diehl noted, however, that the inner facing was usually built in smaller material. In places, the upper parts of the curtain walls are built in a type of cellular construction resembling opus africanum. Diehl argued (_6) that this work was Byzantine and was used as a means of economizing on good ashlar blocks. Between Towers _c and jd on the north wall, however, masonry of this type has clearly been used to repair a breach in the wall (PiXLVIITa; cf. 21, fig. 60). It would seem more probable, therefore, that Saladin was correct in regarding such masonry as belonging to later repairs
(see Ch. IV. 2: 260-261), Diehl also noted traces of a rampart-walk paved with large slabs of stone and with a parapet 0.50 m. wide.

431.

Gaz. AA. Thubursicu Bure (cont.)

Six towers are shown on the plan drawn by Saladin (_2l), though
Diehl counted seven (j6). They stand at the corners of the pentagon with an extra tower flanking the north wall, which is not as straight as the others. It seems likely that there is a tower missing from the east wall, where a distance of about 130 m. separates the two corner towers (jl and _f). Otherwise no more than about 90 m. separates any pair of towers. The towers are rectangular, except for Towers _g and h, which have more irregular shapes. Tower _d, at the north-east corner, projects only on the east side. The front wall of Tower _a is pierced by an internally splayed arrow-slit, covered on the inside by a lintel and relieving arch; its first floor was of wood, carried on reused cornice fragments projecting from the side walls (Fig. 3)
Two gates are known. The first, on the north, was fashioned from
a third-century triumphal arch incorporated into the rampart. The gateway of the arch, 4.14 m. wide, was partially blocked and a smaller arch, about 2.50 m. wide, was inserted and surmounted by the inscription already referred to. The Byzantine gateway was in its turn later blocked. The inscription and the arch were partly destroyed when a doorway to a house inside the rampart was inserted sometime during the eighteenth or nineteenth century. The gate was excavated by Gauckler in 1896 and the original paved Roman street was encountered at a depth of some 5«0 m. below the then existing ground surface (_2, 169-170). The second gate was on the east, facing the Oued Kralled valley; from it led a road down to the Carthage-Theueste road in the valley below. The gate had also been adapted from an existing Roman triumphal arch 5 2.80 m. wide, but was less well preserved than the north gate. It too had been subsequently blocked; indeed, Gauckler argues that the blocking may have been Byzantine (_9, 170-171).

Bibliography:

(1) Atlas Tun. 30,'Teboursouk, 27; (2.) Berbrugger 1857, 376-377;
(3) Boisnard 1935, 38; (4) Carton 1893, 13-14; fig. 4; (j?) Carton 1H95, 115; (6) Diehl 1893, 427-429; (!) Diehl 1896, 275; fig. 9, 20, 22, 60; "(8) Gauckler 1896, pi. XVI; (_9) Gauckler l899b, 169-171;
(10) Graham and Ashbee 1887, 175-176; (_ll) Gue'rin 1862(2), 109-110;

433.

Gaz. AA. Thugga (cont.)

and medieval buildings and occupation layers within the fort (except within the temple podium: cf. 19; 20), so that, seen from the inside, the north gate (j)) is now some 3 m. above (second-century) ground level. The Byzantine ground level within the fort, however, seems to have sloped down towards the west, following roughly the contours of the hill. The walls are between 2.00 and 2.50 m. thick, and built of reused blocks of stone. Where they do not make use of pre-existing Roman buildings,
they are constructed according to the normal sixth-century practice, with-two faces of ashlar enclosing a mortar and rubble core. A row of three engaged piers survives on the south, between Tower _d and gate £; this probably supported a flight of stairs to the rampart-walk.
Two rectangular towers flank the two longer sides of the fort, the north and south. The north tower (_a) measures 7.0 ra. across and pro-jects 4*5 m « Its lower floor was barrel-vaulted, and was entered through a door covered by a stone lintel; this floor is now well below the ground level outside the tower. The tower flanking the south wall is trapezoidal in shape, measuring 10 m. across and projecting 6 m. on the east and 7 rn. on the west. It too was entered through a simple doorway covered by a lintel. The existence of corner pilasters suggests that the lower storey was covered by a groin vault; however, the dif-ference in masonry technique between these and the rest of the tower may betray a later, possibly Aghlabid date of construction (cf. 18, 41).
The fort had two entrances, one on the north between Tower _a and
the capitol, which occupied the north-east corner, and one facing it on the south, just east of Tower _d. The south gate was about 2.30 m. wide; its upper part does not survive, but enough remains to show that the entrance had a single door which opened inwards. The north gate was narrower, about 1.50 m. wide, and was covered by two lintels, one of which a Roman cornice fragment, and a relieving arch.
It is possible that the capitoline temple was transformed into a
chapel in the Byzantine period, though the evidence for this is somewhat tenuous (cf. 19; 20). The line of an outer wall enclosing part of
the Roman town and the plateau above it is also traceable. The part
of this which encloses the plateau seems to have belonged originally to

435.

Gaz. AA. Tigisi (cont.)

of Solomon's first Numidian campaign, although the area around the spring was walled in sufficiently for Althias to be able to prevent the Moors under laudas from being able to water at it (535). An inscription found in 1955 suggests a Justinianic origin for the town walls (Gaz. CB-, Inscr. 3); this is also supported by Procopius in de Aedificiis. At the end of the sixth century, George of Cyprus includes Tigisi in the Descriptio Orbis Romani, and a letter of Gregory the Great (602) mentions a bishop Paulinus, who was episcopus ciuitatis Tegesis. In the closing years of Byzantine rule in Africa, Tigisi seems to have been a seat of the dux Numidiae; such at least is the implication of an inscription from Thamugadi recording the dedication of a chapel by loannes dux de Tigisi between 642 and 64? (Gaz. CB, Inscr. 56).
Tigisi is situated about 40 km. south-east of Constantina and al-
most midway between Gadiaufala in the east and Si la in the west. The fortified site occupies the south-eastern facing slope and summit of a rocky eminence (altitude _c. 950 m.) which is detached from the southern side of the Djebel Hamra. Towards the south-west it surveys the plain of Bahira et-Touila, while below its north-western walls winds the Oued Zenati whose valley forms one of the lines of communication linking the plain with the mountainous region around Constantina to the north*
The enceinte is irregular in shape, measuring 190 ra. across from north-west to south-east, and 217 m. from north-east to south-west; it encloses 3.96 ha. The wall was laid out so as to make best use of the natural defences of the site; the ground falls away sharply to the north-east and north-west, while on the south-east and south-west the slope is gentler, though scarped directly below the walls. Very little now remains to be seen above ground of the Byzantine walls; even the gateway, excavated in 1955 > seems to have disappeared. Fortunately, nineteenth-century accounts allow much of the detail of the defences to be reconstructed. The site was first planned, very crudely, by Capt. Moll in i860 (_12_). In 1882, however, Chabassiere published a survey based on excavations carried out by himself and MM. Goyt and Luciani which remains the most accurate plan available, although modifications of certain details have been made necessary by subsequent work of Diehl

436.

Gaz. AA. Tigisi (cont.)

(4) and Lancel and Pouthier (_8).
The wall is between 2.30 and 2.50 m. thick and constructed of
reused material with two facings of ashlar blocks enclosing a rubble and mortar core. In 1882 it still stood 3 to 4 m. high in places. Excavations in 1955 showed that part of the north wall contained rusti-cated masonry. Chabassi^re's researches revealed traces of fifteen towers, including two flanking the gate, to which Diehl added a further two in the southern re-entrant (j3, _t). Of these, eleven were rectang-ular: Tower _e, which still survives in part, measured 10 x 11 m., and had walls 2.60 m. thick on the front and 1.80 m. thick at the sides (_4). Tower _i measured internally 3.68 x 5.20 m.; externally it was 10 m. wide and projected 8.60 m.; it was entered through a passage, 1.28 m. wide, which led down a short flight of steps to the ground floor of the tower Q). Tower h. was elliptical in plan, though this may possibly have been the result of subsidence; it survived in 1893 to a height of between 5 and 6 m., had a diameter of 10.60 m. and walls 2.30 m. thick (_4). Tower _c[was hexagonal, with walls 1.60 m. thick; while Tower _r, although hexagonal externally, had circular walls with a diameter of 5.70 m. on the inside; its walls were 1.42 m. thick (_4).
The main gateway (_a), which was on the south-west, was cleared and planned in 1955 (.§) It consisted of an entrance, 3.20 m. wide, flanked by two towers set 9 m - apart (Fig. 10). The towers were shaped like engaged octagons with six of their faces exposed. Internally they were circular, with a diameter of 4.70 m., the external diameter being around 7.30 m. The west tower, which was lower down the hill slope than the other and therefore better preserved because more deeply buried, sur-vived to 6 m. in height. It was entered from within the enclosure by a doorway about 1.35 m - wide and 4 m. high, covered by a semi-circular arch. The arch of the other tower had disappeared, though the excava-tors suggest that it had been of brick. From their published plans it seems that the excavators never reached the level of the Byzantine road surface, and about the disposition of the door(s) they say nothing.
In the eastern side-wall of the entrance passage, however, which was over 4 m. long, they uncovered in situ the lintel and relieving arch

437.

Gaz. AA. Tigisi (cont.)

of a doorway, which seems to have communicated with a guard-post; in all probability another faced it at a slightly lower level on the other side of the entrance. There is no evidence for rectangular guard chambers, however, such as Gsell (jS, fig. 157) interpolated onto Chab-assiere's plan (_3, pi. XVI). What Gsell took to be the truncated side walls of these can best be interpreted as engaged piers intended to support the arch of the gateway and the fighting platform above it.
One of the most significant results of the excavation was the discovery of evidence for a later refurbishment of the gateway, at a time when the Byzantine road had been buried beneath 3 m. or more of rubble, which also completely covered the entrances to the guard-posts. In this phase the entrance was narrowed to about 2.0 m. and a paved roadway constructed, Of the possible dating evidence found beneath this road, however, nothing has been published, with the single exception of an inscription fragment; this the excavators dated to the 4th century, but it could equally well belong to the firth or sixth (_8, 250).
There is no unequivocal evidence for any other gateways to the
enceinte. Chabassiere noted one at _b, but Liehl later identified this as a tower (_t) . It seems possible that the two smaller rectangular towers (m and ri) set 9 m - apart may have flanked a secondary gate on the south-east, but no evidence for this survives.
The highest point of the enclosure was crowned by a rectangular building (v) , remains of which may still be seen, though it has been mostly quarried out. Diehl described this as a 'donjon' , measuring 17 x 27 m., with walls 1.20 m. thick (_4, 358). However, excavations in 1955 uncovered instead a building measuring 16 x 17 m. , associated with silos, and built in rubble masonry of a type which suggested a post-Byzantine structure rather than a defensive work.

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al-Bakri, 131; Ibn Hawqal, 84.

439.

Gaz. AA. Tubernuc (cont.)

The fort is roughly trapezoidal (sides: north-east, 42 m.; south-east, 30 m.; south-west, 40 m.; north-west, 34 m.) and, though the east corner has yet to be excavated, seems to have been flanked by a rectangular tower at each corner. It was built around the forum pre-cinct and enclosed an area of 0.12 ha. However, a factor of paramount importance in its siting must have been the spring which fed a series of three stone-built basins just 7 m. south of where the south gate of the fort was built; doubtless it was also possible to tap the supply from within the fort itself. The fort's walls are between 2 and 3 m. thick; they are built of coursed rubble masonry, set in a lime mortar containing flecks of charcoal and faced with stone blocks. Both the facing and the core contain reused material; in Tower _d the core is built in a herring-bone pattern. In places, however, the wall was simply adapted from the pre-existing precinct wall of the forum.
The north tower (a) measured 9 x 8 m. and had a diagonal entrance passage about 90 cm. wide; much of the tower is still buried, and over the top of its remains traces of buildings in opus africanum which sur-vive can best be explained as belonging to a phase of medieval or Anda-lucian settlement (Pl.LIIIb). Towered, on the south, measures 7-35 x 7.80 m. and has walls 1.90 m. thick. It now stands to a height of about 2 m. above ground, and an internally-splayed arrow-slit is visible in its south wall. The walls of a mosque (now destroyed), built in the southern corner of the fort, unfortunately obscure its entrance passage. The west tower (_e) barely survives above ground level, and in plan seems to have been a mirror image of Tower a. (PI. LII"b)
The main gateway was in the south-east wall, 8 m. east of Tower _d.
It was 2.65 m. wide and covered by a semi-circular arch, only the spring of which survives. About 5 m » behind it one of the arches of the
Roman forum was incorporated into the gateway, apparently in situ (Pl.LIIla). Traces of a postern gate can perhaps be identified at _f on the north-west wall adjacent to Tower _e.
Little is known of the internal arrangement of the fort since the excavations only affected between a quarter and a third of the total area. They were undertaken in any case with little thought for under-

441.

Gaz. AA. Vaga Theodoriana (cont.)

de Medjerda, to form one of the principal lines of communicant ion be-tween Thabraca, 68 km. to the north-west, and the towns of the Medjerda valley.
All that now remains of the Byzantine defences are a large rec-tangular tower, forming part of the Turkish qagba, and the trace of a line of walling running north-eastwards away from it down the hill slope. Al-BakrI records in the mid-eleventh century that the town wall had already been destroyed on the east; and Lt.-Col. Playfair writes in the 1887 edition of Murray's Handbook, 'The old Byzantine citadel has been almost entirely pulled down and replaced by comfor-table, if not picturesque Brench barracks. Only the central keep remains, formerly the prison, now a depot for military stores 1 (l2)« Diehl, however, was able to follow the entire course of the wall and his description of 1893 is the best source that we have, now that most of what he saw has also been destroyed; it is particularly unfortunate, however, that no plan of the town walls was made before they ceased to exist.
According to Diehl, the defences of Vaga extended in the shape of
an irregular hexagon, elongated from south-west to north-east, and spreading eastward down the hillside from the Turkish qasba. They were flanked by twenty-three towers. The walls were well constructed, following the usual ^rzantine technique, with large reused blocks of stone facing a mortared rubble core; traces of later rebuilding in opus incertum were also apparent and probably of medieval date,
Diehl f s itinerary begins at the qasba tower and proceeds first
along the north-west wall, which, he says, was relatively well pre-served and flanked by seven rectangular towers. The north wall was flanked by three rectangular towers, measuring 6m. across and pro-jecting 4 m., spaced between 20 and 25 m. apart. On the north-east, the wall became more difficult to follow. In the centre of this stretch, however, near to the Aln Beja stood a gateway (Bab el-Ain), which consisted of a bent entrance set in a rectangular tower. Diehl identified this as Byzantine; the outer gate, arched and surmounted by a relieving arch, he paralleled with that at Ammaedara (q.v.:

442.

Gast. AA. Vaga Theodoriana (cont.)

Tower d_); the entrance then turned a right-angle to the left, and led through an archway set in the curtain wall. After the Bab el-Ain, the course of the wall "became less distinct, although traces of towers were discerna"ble ajnongst the buildings of the Jewish quarter. As the wall began to climb once more towards the qasba, however, its trace became clearer once again. Three towers near the southern end of the * south-east wall, a large tower flanking the corner and a further three on the south were visible, although they had been modified in later times. The south-west wall was better preserved, and flanked by three towers, the last of which had. an arrow-slit in it.
The large tower that occupied the western corner of the enclosure still stands dominating the modern townj despite modifications to it carried out by the Turks (PI. LIVa-b). Externally it measures 18 x 16 m. The ground floor is entered through an arched doorway, with a relieving arch resting on two engaged pillars just inside it. The chamber measures about 14 x 12 m., and is 10 m. high. The vaulting is pro-bably Turkish; but the central pillar and engaged piers set against the two shorter sides of the chamber are original features, suggesting that the Byzantine vaulting consisted of four groin-vaults. Light originally came from two blocked up windows on the south-west wall. Diehl also mentions the existence of a cistern next to the tower, fed from a near-by spring.

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(I) Atlas Tun. ^Q, Be'ja, 128; (2.) Boisnard 1935, 35; (3) Diehl 1893, 414-420; "pi". XX-XXI; plan XXIX; fig. 1; (4) Diehl 1896, 192; 284; pi. 10; fig. 10; (j>) Diehl 1901, fig. 93; Ti) Chierin 1862(2), 38-39; (l) Guide Bleu 1971, 242-243; (8.) Pellissier 1853, 31; (£) Peysconnel 1725, 248; (10) Piese 1885, 520; (ll) Playfair 1977, 234-245; (12.) Playfair 1895, 314; (13.) Poinssot (lj 1936a, 38; (lA) Romanelli 1970, 404; (1£) Shaw 1738, 166; (16) Tissot 1888(2), 304.

GAZETTEER AS.
SITES WHOSE STRUCTURAL REMAINS ARE STRONGLY SUGGESTIVE OP OFFICIAL SIXTH-CENTURY FORTIFICATION, WHEN COMPARED WITH EXAMPLES IN GAZETTEER AA.

445.

Gaz. AB.
AGBIA

Bordj Tbrahim, Ain Hedja (9°14«E 36°23'N) Sbrt

The fort of Bordj rbrahim lies on the west side of the Oued Kralled valley about 5 km* south-south-east of the Justinianic fort at Thugga, and in direct visual contact with it. It was "built on ground which slopes from west to east, and was surrounded by the remains of a size-able Roman settlement. One prime consideration influencing the choice of site was the existence of a spring, the A'in Hedja, which now rises just below the south-east tower (]D). Traces of an enceinte surrounding the Roman town have also been noted Qj 3.). Although it is not men-tioned in any sixth-century sources, it is possible though by no mesons certain that the see of the bishop Fortis Agensis should be identified with the site (646).
The fort is rectangular in shape, except for a dog-leg in the west
wall, and is flanked by a rectangular tower at each corner. It mea-sures internally 36.10 (north-south) x 30.60 m. (east-west), and encloses an area of 0.10 ha. The styles of masonry visible in the standing walls can be broa,dly divided into three categories. The lower part of all the towers a,nd curtain walls is built in the technique usually assoc-iated with Byzantine military works, with large reused blocks of stone (including inscriptions) farcing a rubble masonry core, the walls being 1.95 m. thick. Above this the work is in places (eg. on the east wall) continued in opus africanum, and a.bove this in opus incertum. This latter masonry, when not of very recent date, is associated with the conversion of the fort into a caravanserail. Diehl identified the opus; africanum as original sixth-century work (j?); this need not be the case, however, and a, medieval date is equally possible and perhaps more likely.
The north-west tower (ci) measures 16.00 x 7»?0 m. (^) and seems to have been built over the remains of a,n earlier building, which probably accounts for its odd shape (12)> it novr barely survives above ground. Tower ID measures 7.90 x 7.40 m. (^), and still stands about 10.50 m. above ground level. In the east wall just south of it is a postern gate (e) 9 covered by a lintel and relieving arch. Tower £ is now

446.

Gaz. AB. Agbia (cont.)

partly obscured "by a house built against its south face; it measures 7.80 x 6.60 m. (5.). The present entrance, in the centre of the south wall (jf), "belongs to the caravanserail phase; it may well correspond with the position of the original gateway, however, which must "by now be buried beneath several meters of accumulated occupation debris and hill-wash. Tower d^ measures 7»80 x 5«60 m. externally and 3.80 x 2.60m, internally, the outward-facing walls being appreciably thicker than the interior-facing ones C^). It stands now to a height of about 10 m., but when surveyed by M. E. Sadoux in the iSjOs it was nearer 13 m. (£, fig. 3). Sadoux's elevation drawing shows two floors supported by barrel-vaults at heights of 4»90 m. and 9-00 m. above the then ground level. Although, as Diehl justly observed, these are probably later insertions, they appear to correspond to the positions occupied by the original floors, which may have been of wood. The first floor of the tower was lit by an arrow-slit in its south wall a.nd entered from within the fort through a rectangular door, which must have communicated with either a wooden stair or a two-storey building which butted onto it.
The second floor, on the other hand, communicated directly with the ram-part walk, 9»00 m » above ground level. This was reached from below by means of a stone staircase carried on arcades, which was built against the inner face of the west wall. Although most of this had. been rebuilt at a le.ter date in opus incertum, the arch nearest the tower still sur-vives; it is 1.85 m. wide, and its semi-circular head, is carried on two sculpted corbels. Presumably the rampart walk continued around the whole enceinte, but, in view of the sloping terrain, it is uncertain whether or not it was always at the same level.
Diehl has argued, on the basis of the use of opus africanum in the
upper parts of the surviving walls of the fort, that its date of con-struction was the same as that of Thubursicu Bure, where the same tech-nique is found on the upper parts of the curtain walls of the town wall (but not on the towers). As nan been argued above, however, it is by no means certain that this style of building construction was used in the sixth century for military works; indeed, it seems more likely that wherever it occurs it represents refortification of a later, possibly

447.

Gaz. AB, Agbia (cent.)

post-Byzantine, date (see Gh. IT. 2: 260-261). It is possible to see closer correlations of both masonry and design, however, between Agbia and the Maurician fort at Limisa. The two forts are similar in general layout, and are almost exactly the same size; inconsis-tency in the design, of towers and the use of wooden floors inside them seem to be features common to both; the use of the occsasional block of rusticated stone in the facing of towers is another point of res-embla,nce, although not in itself conclusive. A date for the fort in the reign of Maurice may thus be tentatively suggested.

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(16) Tissot Icr 8'8(2), 342.

See Map 4, no. 77.
Figures 5> 16.
Plates LVa-LVIIa.

Ain Metouia (9°46'E 36°56! N) Fort

The ruins of Ain Metouia lie 20 km. south-east of Kateur (Matera) in northern Tunisia..
The compilers of the Atlas mention 'traces d'enceinte en grand appareil 1. It was only in 1942, however, that the site was studied in detail by G. Feuille, whose report was published in a summarized form by Charles-Picard. Feuille noted the remain?-, of a rectangular enclo-sure overlooking the ruins of the former settlement. It measured
60 x 80 m. (0.48 ha.) and Charles-Picard states that it was comparable in layout to the defences of Sufes, with the single difference that the north-west wall was further strengthened by a 'bastion 1 measuring

448.

Gaz. AB. Ain Metouia (cont.)

7 x 11 ra. The vails, built of reused material and 2.10 m. thick, were flanked by square towers spaced 10 m. (?) apart. The only iden-tifiable structures inside the enceinte were a chapel, a well and a cistern* Below the walls there was a spring.
The description would seem consistent with the conclusion of
Feuille and Charles-Picard that the structure v;aa Byzantine, most prob-ably of the sixth century. However, it should be noted that the two enceintes at Sufes measured internally 30 x 41 m. and 110 x 190 m. and that neither of them had towers spaced only 10 m. apart. This consi-deration throws some doubt on the reliability of the report as presented by Charles-Picard and also illustrates the need for field-work to be undertaken both to confirm the identification and to elucidate the details.

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See Map 3, no. 48.

CHOBA

Ziama (5°28'E 36°40 I N) Town wall

Ghoba lies on the Algerian coast between Saldae (Bejaia) and 2&il^ljL (Jijel), almost due north of Sitifis, from which it is separated by the mountains of the Petite Kabylie.
The Roman town wall, described by Pelletier in 1857 a^d erroneously attributed by Diehl to the Byzantines (2_, 259 n. 3), enclosed an area of some 14 ha. on the east bank of the Oued Ziama where this meets the sea. Gsell's survey of the site (3.) revealed the existence of another wall, evidently secondary to the main fortification, which ran from east to west cutting the defended area roughly in half. This wall was built in the manner normally associated with sixth-century fortifications, with two outer facings of reused blocks enclosing an inner core of rubble. It was 1.80 m. thick and flanked by rectangular towers, the

450.

Gaz. AB. Diana Veteranorum (cont.)

and flanked "by four rectangular angle towers. Excavations by M. Bernard in 1881 proved abortive (4_), but between 1950 and 1953 M. Godet was able to expose the north-west gate, dig a sondage in the northern corner of the fort and empty the northern tower of its contents. The results of this work are still unpublished (cf. 11), but examination of the collapsed section of Godet's sondage in 1975 suggested that a long sequence of occupation within the fort was represented in it, post-dating the Byzantine withdrawal. This medieval occupation no doubt accounts for the difference in ground level of about 3 m. be-tween the interior and exterior of the fort and for the excellent pre-servation of the Byzantine walls where they survive below ground level. The walls of the fort are between 1.60 and 1.70 m. thick, standing
in places to around 4 m. abo^/e the ground and enclosing an area of 49.5 x 57.5 m., or 0.29 ha (8j £). They are solidly built with large blocks of stone, including reused second-century inscriptions and cornice fragments, enclosing a rubble masonry core. The walls of the towers are in contrast between 2.10 and 2.30 m. thick, the towers them-selves measuring 9.40/9.60 x 8.30/8.50 m. (8_; £). Their entrance-passages are 0.80 m. wide and of the lateral type5 those on the north and south are left-hand, and those on the east and west right-hand, thereby making the fort symmetrical about a north-east to south-west axis.

The fort has opposing gateways in the centre of the south-east
and north-west walls. The south-east entrance is not well preserved. The north-west gate, however, was about 1.60 m. wide, a,nd flanked internally on the left by a buttress which may relate to a stairway to the rampart walk. In its present state the entrance-passage is covered by three irregularly dressed lintels. These are almost cer-tainly post-Byzantine, and belong to the period at which the gate was narrowed by about 50 cm. by the addition of a pair of roughly dressed stone jambs at its outer end. The threshold associated with this phase is probably as much as a metre above the original threshold. In its final phase the gate was completely blocked with rough stone walling.
The walls of the fort do not survive high enough for one to tell

451.

Gaz. AB. Diana Yeteranorum (cont.)

whether there was a rampart-walk, although this seems most likely. Traces of such a walk can "be seen, however, on the north-east and north-west walls; but these evidently belong to a later phase 6'f for-tification when the walls had been somewhat reduced in height.
To the west of the fort stands the Arch of Macrinus, marking one
of the entrances to the forum. At a date probably in the fifth or sixth century, but possibly later, this came to form the north wall of a ksar, measuring 20.5 x 16.84 m. It contained several rooms opening from a central corridor, had at least two storeys and was pro-vided with a well and silo. Excavations in the 1930s revealed a num-ber of occupation layers, the latest of which was associated with pottery of f Berber 1 type (4.5 £). In the absence of more accurate dating for the construction of the building, it is uncertain whether
it could at any time have had any specific military function related
to the fort, for example a.s a watchtower (cf. Ammaedara, Mactaris),
The dating of the fort can be no more than tentative. Diehl
argued for a seventh-century dote on account of the unusual thickness of the walls of the towers compared with the curtain (6^). Since only one African fortification can be dated with any certainty to the seventh, century, however, and since it has no towers, Diehl's argument has no foundation. Apart from the general Byzantine character of its masonry and layout, two considerations may be taken to suggest, very tentatively, that the fort at Diana, was Byzantine and Justinianic. In the first pla.ce, the fort appears to have been laid out in Byzantine cubits and feet. The distance between the towers is in all cases just over 47 m.j the equivalent of 100 Byzantine cubits; the towers themselves a.re the equivalent of 20 cubits (30 feet) x 18 cubits (27 feet). The second piece of evidence is the reference by Procopius to the construction by Justinian of a fort at a place called rttiavd^ lying in Numidia; the fact that Procopius also describes this place as lying near to the Aures may not be particularly significant, since he says the sr.-me of t'ileu. It does not seem inconceivable, however, that Tcuavd i s a corruption of Atavd, since no other place of that name is known (see Gaz. CA).

454.

Gaz. AB. Guelaa Sidi Yahia (cont.)

The fort was built on a rocky plateau defended on the north and south by cliffs, 60-70 m, high, which form the sides of the ravines through which flow the Oueds Aar and Chair respectively. The ascent on the west is steep, but on the east is slightly more practicable. The two published pla,ns of the fort are unfortunately somewhat crude (2.9 4., pi. VI). However, they both show that its shape is roughly trapezoidal and that it was flanked by rectangular towers or bastions. Gsell, who provides no plan, gives the overall measurements as 145 ni. from ec'st to west, and narrowing from 100 m. at the east end to 50 m. at the west. Robert quotes the area as 1.83 ha. (£), a figure which seems unlikely to be far wrong, although it may be noted that the dimen-sions given by Gsell produce a figure nearer 1.10 ha., and de Vigneral f s plan one of a.round 2.10 ha.
The walls were built in the usual Byzantine military fashion, 1.70- 1.80 m. thick with a double facing of ashlar blocks, laid in 35-50 cm. courses and enclosing a mortared rubble core. The relative scarcity of obvious examples of spolia at first led Robert to suggest a Roman date for it, an idea that he later abandoned (£; 10); Gsell noted a fluted column built into the wall (8J.
The west side of the fort, the shortest, was flanked by two rect-angular bastions, 9 m » broad. The north wall had no bastions, but flanking cover was provided by the same system of dog-legging that can be seen at Tigisi (q.v.). The north-east angle was fla,nked by a large bastion, measuring about 10 m. (N) x 30 m. (E). The east wall had three other bastions, including the south-east corner bastion; these measured 10 m. across and projected 8.80 m. On the south, Robert's plan shows a further three rectangular bastions, of which the two nearest to the east end flanked the main entrance to the fort; this was 3.0 m. wide and approached by a track leading up to it from the east. In the centre of the fort stands a solidly built rectangular
structure (19 x 22 m.), identified as a donjon but perhaps more likely to have been the principia; it was constructed on top of a complex comprising nine vaulted cisterns (8_).
Gsell is probably correct in seeing this fortress as an official

455.

Gaz. AB. Guelaa Sidi Yahia (cont.)

Byzantine work, rather than an unofficial refuge (]_}. There is a real need for a more accurate survey, however, "before the problem can be resolved with certainty.

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(!) Atlas Alg., 18, 2475 (i) Bernelle l892a, 63-64; (3.) Bernelle I892b, 5065 (4) De Vigneral 1867, 35-36; pi. VI? (£) Diehl 1893, 362-363; (6) Diehl 1896, 28?; 606-60?; (l) Gsell 1898, 262-265;
(£) Gsell 1901(2), 377-378; (2) Robert 1896; (10) Robert 1899, 248-249;

See Map 3 5 no. 53.

Kef el-Kherraz (7°27'E 36°09'N) Fort.

The fortress is situa.ted at an altitude of aroimd 1000 m., 9 km. west-north-west of Sedrata, overlooking the valley of the Oued Nil, a trib-utary of the Oued Cherf. Its relationship to the Roman road system is uncertain, but it seems likely that it stood a short distance north of a road leading from Thubursicu Humidiarum to Gadiaufala.
The site is on a promontory, surrounded by cliffs of at least
60 m. on the south, south oast and west. The artificial defences which protected the more exposed north-west side, enclose an area of some 0.20 ha. The plan of the fort is like that of an hour-glass, with an inner (higher) and outer enclosure linked together by a gate-tower (d_: c. 4.5 x 6.0 m.). The walls are 1.80 m. thick and built with a double facing of blocks enclosing a rubble core; they survived to only a, few courses in height when Gsell surveyed them in the 1890s. The outer enceinte, built against the south-west side of the promontory, is flanked by a rectangular open-gorge bastion (a,: c. 4.5 m. broad)
and a rectangular tower (c: £. 4-5 x 4-5 nu). Between these lay the outer gateway to the fort (b_).
The irregular plan was evidently imposed by topographical consid-erations and does not necessarily betoken, as Diehl argues, an unoffi-cial work. A Byzantine date is suggested by its general similarity to the Justinianic fort at Tha/mra.

456.

Gaz. AB. Kef el-Kherraz (cent.)

Bibliography:

(I) Atlas Alg., 18, 2555 (2.) Bernelle l892a, 100; Q) Bernelle l392b, 519;(4) Diehl 1896, 602; 613; fig. 78; (£) Gsell 1898, 260-261; plan; "(o) dsell 190l(2), 394-395.

See Map 3» no. 54
Figure 31.

Ksar Graouch (9°27 f E 34°27'H) Port (and church ?)

Ksar Graouch lies 68 km. east of Gapsa (Gafsa), to the north of and almost midway along the modern secondary road (c 124) which reaches the coast "between lunci and Lariscus (La Skhira). The site lies on the northern edge of a plain, the Bled et-Thala, roughly 15-20 kin. wide, which is encircled "by mountains on all "but the east side. At a dis-tance of about 4 km. to the north-west, the Kesch pass affords access through the mountain ranges to people approaching from the region aground the Chotts.
The fort stands on the lower slopes of the Djebel bou Hedma in the centre of a zone of ancient cultivation which extends over about 4 -ia-« It is rectangular in plan, enclosing 55*50 x 37«70 rn. (0.21 ha.), and is flanked by five rectangular towers, one at each of the corners and
a smaller one placed centrally on the south (long) side. The fort is therefore symmetrical in plan about a north-south axis.
The walls are 1.75 m » thick and constructed in a singular manner.
The lower 2-3 m. which survive above ground are built with large ashlaj? blocks (1.20/1.80 x 0.40/0.60 rn.), apparently enclosing a rubble and mortar core. Above these the construction is continued in bricks, bonded with a strong mortar. The bricks are unfired end made from a type of Triasic ma.rl containing gypsum vhich occurs naturally in the locality. Cintas gives the height and length of the bricks in the first six courses of brickwork v^ 20 x 60 cm., amd above these as 10 x 50 cm.; Prive gives a single set of figures, 15 x 30 :: 43 cm. On one in ten of the bricks which lay on the ground Cintas observed a graffito mark, usually a. cross but on some examples an emblem Uiich lie

457.

Gaz. AB. Ksar Graouch (cont.)

interpreted as an anchor.
The corner towers of the fort measure 9.60 x 8.15 m. and have
lateral entrance passages (l.-h. in the north-west and south-east towers; rt.-h. in the north-east and wouth-west towers). Prive gave the height of the towers in 1895 as 8-9 m., and that of the curtain wall as 6 m. Part of the north-east tower was still standing in 1951 to almost 8.0 m. and there appears to have "been a round-arched aperture in the surviving curtain adjacent to it (!_, pi. II, fig. l). Inside the tower, Cintas observed a stuccoed niche decorated with a vine branch painted in blue, with leaves painted green and a red bunch of grapes* Of the south-west corner tower nothing survived above ground (l95l)» Th© smaller interval tower on the south is about J.0 m. broad and projects about 4*0 m.; the plan made by Cintas shows it to be open-gorge. Prive locates the entrance to the fort on the north, but Cintas suggests that it may have been on the east; its character is therefore uncertain. Inside the fort Prive* noted the remains of buildings con-structed in ashlar and a cistern against the centre of the east wall. Cintas saw fragments of columns and capitals, which he described as of no interest.

The only datable objects recovered from the site are two identical sculptured stone blocks. The more intact one measures 28 x 48 x 28 cm. and on one face of it is carved in low relief an elongated Greek cross of a type evidently inspired by metalwork, set in a, lozenge of twisted cord decoration. The lower part of the cross is flanked by a and u> and the four triangular areas outside the lozenge are decorated with palm branches (^, pi. II). Of this stone Cintas writes, f il permet de conclure sur la destination de 1'edifice ou, apparement, dut vivre une communaute chretienne ... Mais les indices recueillis sont insuf-fisants pour conclure qu'il s'agit d»un monastere 1 (!_, 205). However, in his subsequent discussion, Cintas leaves the rea-der in little doubt as to his own opinion that it was a monastery, and even goes as far as to suggest that it may have been that founded by Paustus, bishop of Praesidium Diolele, after his expulsion from his see by Huneric in 484. Although the date of the building and its purpose will only become clear after more detailed survey and excavation, there are already good reasons for believing that Cintas*s hypothesis is unlikely to prove

458.

Gaz. AB. Ksar Graouch (cont.)

correct. Whatever the status of its occupants may have been, it is clear that the outer wall of the "building was "built for a purely defen-sive purpose and that it constituted in essence a fort. Cintas explains the defensive character of the "building by arguing that the holy men of the fifth century built their monastery in the ruins of a second-century stone-built fort. If the lower part of the structure originally formed part of a Roman fort, however, its date could not, on account of its masonry and projecting towers, have been earlier than the mid-third century and would more probably have been fourth-century or later (Trousset 1974, 133-135). But a fort of this date would have been too far north to have formed an effective part of the late Roman limes system (Trousset 1974» fig. 37-38). In addition, despite its general similarity to the late Roman forts of Trousset f s "castellum" class, Ksar Graouch finds no close parallels amongst them, wherea,s its similarity both in size and layout to forts of the sixth century, such as Gadiaufala (0.16 ha.) and Diana(0.29 ha.), is much more striking.
Other factors besides suggest a Byzantine rather than a Vandal interpretation. The building technique of brick on a stone socle, although unattested elsewhere in Africa in either Byzantine or Roman contexts, is similar in general principle, if not in the detail of its execution, to the technique associated with Byzantine imperial work later than the fourth century (Mango 1974> 14f.)- At Thessalonica, for example, the mid-fifth-century walls were built in different styles of brick and stone masonry on a substructure of large stone blocks (Vickers 1974); and at the Justinianic fort of Ksar ibn Wardan and the contemporary barrack building at Androna, in northern Syria, the masonry technique consisted of a base of basalt blocks facing a rubble and mortar core, upon which the structure rose in alternating bands of brickwork and basalt (Butler 1920, 22-45; 50-52). The incised crosses on the bricks at Ksar Graouch also suggest that they may have been produced under imperial control, as at Dyrrachium (Durazzo) in Albania (Zheku 1972, fig. 9) and Ravna on the Danube (V. Kondic, in Trifunovic (ed.) 1969, H7)> fortifications built under Anastasius I and Justinian I respectively; while the "anchor" emblem may represent

459.

Gaz. AB. Ksar Graouch (cont.)

some kind of monogram (because no facsimile is published it is impos-sible to be certain). The choice of brick as a building material instead of stone throughout may be explained by the relative ease with which sun-baked bricks could be produced and transported in the desert regions (see Ch. IV.2: 261-263), or perhaps, as has been argued by Butler in the case of Ksar ibn Wardan, by the level of direct imperial involvement in the fort's construction.
If the masonry and layout of the fort both suggest Byzantine work, what do the Christian motifs, the crosses and the vine-scroll, tell us about the function of the building? Cintas argues that the sculptured stone crosses provide evidence that its function was religious (l^, 203 n. 2). However, crosses and Christian monograms are common features of Byzantine fort ifications of the sixth century and after and do not imply a specifically religious function. As for the date of the crosses, a close parallel for their form and the style of the carving is to be found, as Cintas himself points out, in a sculptured slab from al-Asabaa in Tripolitania, which is dated to the early sixth century, either just before or after the Byzantine reconquest (Ward-Perkins and Goodchild 1953» pl» XIIc). Neither are wall paintings displaying a Christian iconography out of place in Byzantine forts, although it is true that they rarely survive.
If a religious interpretation still seems justified, however, one possible parallel is to be found at Pirdop, in Bulgaria, where a church of the Justinianic period is surrounded by a rectangular enclosure, measuring 33 x 40 m. internally (0.13 ha.), flanked by bastions with lateral entrances similar to those at Ksar Graouch (Eoddinott 1975> 280-285; pi. 169-171; fig. 77) Although some writers have claimed that this too was a monastery, Hoddinott interprets the church as secular and the defences as a refuge for the local community. A similar interpretation may well apply also to the buildings at Ksar Graouch, but until the site is excavated it will not be possible to be certain.
Whether there was a church or not, however, a fort and garrison situated almost midway between Ce.psa and the coastal towns of lunci

460.

Gaz. AB. Ks&r Graouch (cont.)

and Lariscus and controlling one of the passes to the north would have "been of obvious strategic importance in the sixth century, a consider-ation which argues strongly for its inclusion in the list of official fortifications of that period. It may be recalled by way of analogy that Justinian also fortified the monastery of St. Catherine at Mount Sinai both in order to protect the monks and to serve the strategic needs of defending southern Palestine (Procopius, de Aeft., V, 8, 4-9; Forsyth 1968, 4-5) It seems very unlikely that such a building as Ksar Graouch could date from the Vandal period, unless perhaps it were to have been built under imperial patronage during the reign of Hilderic (523-530). More probably, however, the fort (and church if such there was) was built under Justinian, either by Solomon, who was responsible for fortifying Capsa, or by John Troglitas during the campaigns of 546-548 against the Moors in southern Byzaciura.

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(I) Cintas 1954; (2.) Goetschy 1893, 94; 2 photos; (3.) Prive 1895, 130-131;

See Map 3, no. 22.
Figure 23.

Ksar Otsman (7°22'E 36°l8»N) ?Fort

Ksar Otsman is a defended hill-top site lying about 20 km. south-south-west of Calama on the north side of the Oued Sebt (Oued el-Fereda), a tributary flowing west into the Oued Cherf. It stands on the roaxl 1inking Thubursicu Numidiarum and Tipasa (Tifech) with Thibilis.
The defences, measuring overall about 150 x 60 m. and enclosing
some 0.55 ha., cover the summit of a sandstone ridge, oriented east-west parallel to the river; on the south and west, this presents a vertical face between 100 and 50/80 m. high; on the north, the ascent is steep, but an easier approach is possible from the north-east and east. It is on these sides, therefore, that the man-made defences are the strongest. These consist of three successive enceintes

461.

Gaz. AB. Ksar Otsman (cont.)

enclosing an increasingly more restricted area towards the western part of the site, which is narrower and higher then the rest. "Hie east wall, 1.50 m. thick and flanked "by three rectangular bastions, presents a straight line of defence 60 m. long. It is built like the rest of the enceinte with two faces of la.rge ashlar blocks enclosing a rubble masonry core. The north-east corner tower (ji) is 5.0 x 5.0 m. The central tower (b) stands astride the wall5 it measures 4.20 x 4.20 m. with walls 1.0 m. thick, and flanks the main entrance to the enceinte on its south side5 its base was used as a cistern (cf Thagura). The southern end of the wall was f la,nked by a large open-gorge "bastion (c_). The second line of defences consisted of a wall running obliquely to the first, defended by a tower (£5 7 x 7 m.; walls 1.10 m. thick) placed at its leading edge. The third enceinte (f) was parallel to the first; no signs of towers or gates associated with it have been found.

A Byzantine date for this enceinte seems very likely if one allows
for the fact that the irregularities of the plan are largely dictated by the topography of the site. Similarities with Thagura are partic-ularly marked.

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(I) Atlas Alg., 18, 193; (2.) Bernelle I892a, 61; (3.) Bernelle l892b, 504;(4) De Vigneral 186?, 29-30; pi. IT; (£) Diehl 1896, 611-612; fig. 77; (i) Gsell 1898, 252-255; plan; (]_) Gsell 1901(2), 393-394.

See Map 3, no. 55
Figure 34.

MACTARIS

Maktar (9°13'E 35°51'N) Fort

The Roman town of Mactaris (Ciuitas Mactaritanum) occupies a plateau set at an altitude of around 950 m. in the Tunisian Dorsal, bounded on the north and south by tributaries of the Oued Siliana. To the west, the Maktar massif rises to nearly 1,300 m. Of the network of roads which fan out from the town in all directions the most significant

462.

Gaz. AB. Mactaris (cont.)

strategic route was probably the one linking Laribus, to the north-west, with Ghusira and the plain south of Kairouan to the south-east. The Byzantine fort of Kactaris was established in the partly
ruined shell of the Severan baths, on the south-eastern edge of the town. The fortification consisted of adding an outer cladding of large ashlar blocks, including reused inscription and architectural fragments, bonded with mortar, to the outer wall of the complex, thereby increasing its thickness to just over 2m. in places, as in the northern part of the west wall, a more conventional f Byzantine f wall was built de nono. Much of the south and west part of the site has yet to be excavated; on the north and east, however, the exposed wall shows clearly the vertical divisions marking the limits between the sections built by different working parties.
Overall the fort measures 85 x 52 m.; since much of the interior
is taken up with standing masonry forming part of the baths, however, the internal area can hardly have been more than about 0.35 ha. The excavated portion of the wall is devoid of any bastions except at the north-west corner, where a bastion 3.60 m. squa.re flanks the west wall only, and was evidently intended to protect a doorway 6.50 m. to the south of it. This gate (]D) is 1.45 nu wide, about 2.0 m. high and covered by a lintel and relieving archj it is also rebated to take a wooden door opening inwa.rds. A second door of similar design, but now lacking its lintel, was built into the centre of the east wall(c); here no flanking bastion was necessary, however, since this part of the wall is recessed, following the wall of the baths. The threshold of this door lies about a metre above the edge of the Roman plunge bath, just inside it, indicating not only the abandonment of bathing facilities but also the rise in ground level prior to the construction of the fort.

Since most of the excavated part of the fort has been stripped,
since 1955, of all later accretions down to its pristine third-century state, we must await the publication of the final exce.vation report for an account of the internal arrangement of the fort (c£. 4_; £.) Internal dividing walls, their foundations resting on the surfe.ce of an earlier floor paved in black and white moasic, still survive (1975),

463.

Gaz. AB. Mac tar is (cont.)

however, in the north-west corner. The association of stone mangers, fenestrellae, and a stair leading to a vanished, upper storey suggest that, as at Thamugadi, equipment and animals were possibly accommodated below, and men above; this would explain the apparent lack of barrack buildings mentioned by Gharles-Picard (£, 23). Since the aqueduct was defunct by the end of the fourth century, a well, dug through the floor of the frigidarium would have supplied the garrison with water (2_). There is also a suggestion that the northern palaestra and exhaedra were converted into a chapel. The ground level in the exhaedra, 1.40 m, above that of the paved court, was revetted by a wall running between the first and second pilasters from the north and contained an inhum-ation grave in a cist (4_).
About 175 ni. north of the baths, an arch standing at the entrance
to the Trajanic forum was incorporated in a later period into a ksar built against its southern face (3.). Since the arch occupies a higher position than the baths, it may have served as an advanced look-out post, surveying the area, to the north.
The masonry technique and the evidence for the existence of barrack buildings suggest that the fortification of the baths represents an official Byzantine fort rather than a work undertaken through local initiative. The closest parallel from amongst the dated group of forts is the part of the enceinte at Calama that encloses the Roman baths; and here again we find that the single bastion on this part of the defences was designed to flank only one side of the building. This might suggest a Justinianic date for the Maktar fort, rather than the 'late Byzantine 1 date put forward by Diehl. Apart from some civilian epitaphs in the basilica of Hildeguns, the only documentary reference to Maktar in the Byzantine period is to its bishop Victor around the middle of the sixth century.

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Maier, 163-164 (Mart ar it anus (c_. 550)).

(!) Atlas Tun. 100, Maktar, 186; (2.) Bourgeois 1974, 191; (3.) Charle Picard 1954, 17; fig. 5; (4.) Charles-Picard 1972, 153; (5.) Charles-

464.

Gaz. AB. Mactaris (cont.)

Picard 1974, 23-24; fig. 1-2, 4; (6.) Claude 1969, 26; Q_) Diehl 1893, 397-398; pi. XIX; (J3) Diehl 1896, 294; (£) Foussard 1923, 52; (1C)) Gue'rin l862(l), 408-409; (ll_) Guide Bleu 1971, 272;
(12) Poinssot (L) 1936a, 33; (13) Saladin, in Poinssot (j) l884a, 364-365; pi. XXVI.

See Map 3, no. 57*
Figures 5, 35*
Plates LXb-LXIb.

MVSTI

lest (Hr.)» Le Krib (9°09'E 36°20'1\T) Fort

Musti lies in the plain of le Krib, "between the mountains of Teboursouk and the chains of the Tunisian Dorsal and at the watershed "between the Oued Khaled and Oued Tessa. Some 9 km. south-west of Musti, at Thacia, the main road from Carthage divided into two, one route heading due west to Thagaste, the other south-west to Theueste via Laribus, Obba and Ammaedara. A minor route also connected the town with Vchi
to the north, and thence to the Be'ja region and Thabraca,
The Byzantine fort is shaped like an irregular parallelogram, measuring overall about 50 x 50 m. and enclosing 0.20 ha,. It is sited in the upper part of the Roman town and incorporates earlier buildings, including a complex of three massive vaulted cisterns. Since 1959, i"t has been the subject of excavations carried out by M. Bouloudenine of I.N.A.A.; apart from some epigraphic discoveries, however, the results remain unpublished (cf. 2$ 3). The fort is built entirely of reused blocks of stone, employed as facing to a rubble masonry core. The walls are on average 2 m. thick, and do not stand above about 3 m. in height. The character of the masonry changes in accordance with what-ever stone was available for each part; in places it includes rusti-cated blocks, elsewhere elongated stones laid in courses.
The main entrance was on the south. It was about 2 m. wide and flanked by a pair of rectangular towers set 27 m. apart. Inside the wall, to the right of the gate, a flight of stone steps carried on arches led up to the fighting platform over it, and possibly to a, raja-part walk although there is no other evidence for one (PI. LXIIb).

465.

Gaz. AB. Musti (cont.)

A secondary gate, 1«10 n. ride and 2.0 m. high, with the lintels covering the passage still in place, stands at the southern end of the east wall. It is partly shielded by an eastward prolongation of the south wall5 however, this feature can hardly be described as a bastion. No other towers or bastions existed; indeed, it is not entirely certain whether the south-west corner tower (e) was ever completed. The step-ped trace of the north wall and part of the east wall, however, ensured that only two short stretches of the enceinte were without flanking
cover.

Inside the fort, some of the walls of pre-existing Roman buildings
were retained and incorporated into a new planned layout. However, more than half of the fort f s interior has now been excavated to below the Byzantine levels; for a full account of the fort's interior we must therefore await the publication of the final excavation report.
A number of stone mangers and fenestrellae_ (one representing a cross inside a circle) littering the site, however, suggest the former pres-ence of barracks, similar to those at Mactaris.
The only documentary reference to MiistjL in the Byzantine period is
to its bishop lanuarius in 646. However, the characteristic position-ing of the fort to control the water supply, together with architectural features such as the stairs inside the south gate, the rectangular bastions, the stepped layout of the north wall and the evidence for barracks, argue strongly for this being regarded as an official fort, despite its irregular plan.

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Maier, 177 (Mustitanus (646)).

(I) Atlas Tun. 100, Jama, 3; (2.) Eeschaouch 1967, pi. I?
(3.) Beschaouch 1968, photos, pp. 122, 164; plan p. 168;
(£) Guide Bleu 1971, 264; (5.) Guide Bleu 1974b, 264-2655 plan.

See Map 3, no. 58.
Figure 37.
Plates LXIIa-LXIIIa.

46?.

Gaz. AB.
THVBVRSICV NVMIDIARVM

Khamissa (7°40'E 36°12'N) Port The Roman town of Thubursicu Mum id i arum lies on the northwestern
slopes of the Djebel Tifech, near to the headwaters of the Oued Medjerda at an altitude of around 900 m. The toi-m of Tipasa, 5 km. to the south-east on the other side of the Djebel, represented an important cross-roads where the north-south route from Hippo Regius to Theueste cut the east-west road between Carthage and Constantina. It was pro-bably this consideration which caused Thubursicu to be regarded mili-tarily as of secondary importance in the sixth century, a fact reflected in the small size of the only one of its many late Roman or Byzantine defensive structures that may be regarded as an official fort.
The fort was built, like that at Mactaris, around the ruins of a
Roman bath building, on the north-west side of the forum nouum. The building had already gone out of use by the time that the fort was constructed, and 2.50 m. of rubble had accumulated over its mosaic floors (4.). The south and east walls of the fort correspond xvith the south and east walls of the •••HHM^*W>V-

frigidarium . IV .-• , ... » * 4 and 4tta^M^^B^WH^^HB^H^B«^^^

palaestra of the baths.
Where it suited the purpose of the Byzantine engineers the standing por-tionis of the building were retained and an ashlar facing of large re-used blocks of stone bonded with strong rubbly mortar was added to the exterior. The thickness of the wall thus formed varied, but was never less than 1.60 m. The parts of the structure which did not comply with the general scheme were simply demolished. It is difficult to ascer-tain from the standing remains where the north and west walls of the fort lay, since the whole of the interior of the fort, and, it may be suspected, other parts as well, were destroyed during excavation (A). The dimensions of the fort taken before excavation began, however,
were 31 x 17 m. (2_; 2.5 Q). This would seem to imply that it com-prised only two rooms of the bath building, the frigidarium and the palaestra, whose overall dimensions after excavation are about 30 x 20 m. (4_, fig. l). The area of the fort was therefore about 0.045 ha. (Traces of walling to the north, however, could imply the inclusion of the corridor adjoining the two rooms as well).

469.

Gaz. AB.
THVGGA TEREBE1TTINA

Dougga (Hr.) (9°00'E 35°55'N) Fbrt

The Roman town of Thugga TereTtentina lies in the fertile valley of Ksour, on the east bank of the Oued el-Hathob, only a few hundred metres from its source. The river's course marks an important north-south line of communication, providing access to most of the natural routes leading north-east through the Tunisian Tell and Dorsal regions, including the Medjerda valley, to people coming from the steppe regions of the south. Roman roads linked the town to Sufes and Sufetula in the south, and from Zanfour, a short distance north of it, roads led ^° Laribus in the north-west, Musti in the north, and the Oued Siliana valley in the east.
The fort is represented today "by a low rectangular platform, which rises just above the surrounding corn (PI. LXIIIa). Little masonry survives a,bove ground level. Guerin described the fort in 1862 as rectangular, measuring 70 x 80 paces, and formerly flanked by a square tower at each corner (4.). His description seems to be correct. The internal measurements of the fort are about 48 x 55 m » (0.26 ha.).
At the western angle, where the walls are best preserved, it is possible to trace the outline of a rectangular tower with a left-hand lateral entrance passage. The fort's walls at this point are about 1.30 m. thick, and built of two facings of reused ashlar blocks with a rubble fill. Elsewhere the walls are less well preserved, and show signs of later rebuilding using smaller stones. Traces of a tower survive at the eastern angle; the north and south towers, however, are missing, though in the case of the northern one the trace of a right-hand entrance passage in the corner of the fort suggests that the fort was symmetrical about a north-west to south-east axis. In its post-Byzantine phase, the entrance to the fort was in the centre of the south wall; here part of a massive monolithic circular door (diameter unknown) protrudes from the rubble. In all probability the Bysantine door was in the same position.
The fort can be most closely paralleled by Diana and Nadauros JE,
which are of comparable size and show the same axial planning involving towers with lateral entrances. The smaller fort at Gadiaufala has

471.

Gaz. AB. Tignica (cont.)

When Thomas d! Arcos visited, the site in 1631, the fort was occu-
pied "by 'Alarbes sauvages 1 (sic). By the early eighteenth century, however, it was deserted (30.). A cornMnation of human occupation and the accumulation of deposits of alluvium from down the hillside 1ms caused the fort to "become submerged, "both inside and out, "beneath at least 4 nu of soil. In a somewhat abortive campaign of excavation in 1907, Carcopino dug three slit trenches between the cactus plants that choked the fort f s interior, and encountered a mass of dry-stone walling which, because of the small size of his trenches, he was unable to in-terpret. The fact that Islamic glazed pottery was still being found in one of the trenches at a, depth of 3 m. illustrates the potential importance of the site for providing a, cultural secuence from the Byzantine to the Muslim period (%)•
The north-west tower (a_), now partly fallen, measured 7-00 x 5»40 m.
and was entered by a right-hand lateral passage. Tower ID still stands over 10 in. high. It is 7»75 x 8.40 m. The entrance to the ground floor is covered by a segrnental arch, which is roughly level with the ground level inside the fort. The first floor was of wood, carried
on reused cornice blocks set in the side walls of the tower5 it was
lit by a rectangular window fencing into the fort, and internally-splayed arrow-slits on the north and east. The upper floor was barrel-vaulted5 thus, access to the fighting platform above can only have been possible from the rampart walk. Tower £ is the largest tower, measuring 10.60 x 9.15 m., and has a slightly irregular shape. The door to its ground floor (or possibly first floor) is covered by a segmental arch made of reused voussoirsj the ground floor was lit by four arrow-slits (north, 1; east, 1; south, 2), placed jiist below the dividing floor and thus unlikely to have been used as firing loops. The first floor was lit by a rectangular window facing into the fort, and by six arrow-slits (north, 1; east, 2; south, 3). Tower £, measuring 10.05 x 6.90 m., is not well preserved; apparently it had. a diagonal entrance.
The positioreof two gates are known. One of these is c, bent entr-ance set within Tower <i in the centre of the south wall. The tower is 9-70 m. broad, and projects 7.10 m.; the first floor is a cross-vault

472.

Gaz. AB. Tignica (cont.)

carried on corner pilasters. The inner arch of the gate has a span of 3.20 m. The outer one, set in the west wall of the tower and of cornpara"ble size was formerly provided with a flat; lintel, covering an entrance 2.95 ni. wide. Both arches are composed of reused voussoirs taken from Roman "buildings. As Saladin has pointed out, in both cases the packing around the extrados of the arch appears to "be inexpertly-executed. For this reason, Greswell has suggested that they were both inserted after the tower had been built. A second entrance to the fort, 3 m. wide, the arch of which only just projects above ground level, was first noted by Diehl (12), and later by Creswell. Its position in the centre of the west wall, 35 m. from the nearest flank-ing tower, might seem an unlikely one for a gateway. It may have been this consideration that led Diehl to suggest that it was merely a 'postern*, intended to allow the waters of the A'in Tounga to flow out of the fort| however, this could have been accomplished by a much narrower conduit. Creswell, on the other hand, identifies this as the main entrance of the fort, arguing that the bent entrance in Tower d_ replaced it only after the Byzantine period. Creswell f s argument will be discussed below*
Internal arcading survives on the upper part of the north wall,
and. the absence of internal communication between the first and second floor of Tower b_ suggests the existence of a rampart walk. The trace of an outer enceinte, extending up the hill to the north of the Roman town, has also been noted, though its date is uncertain (l_, plan; 21, plan).
Diehl's argument that the fort at Tignica was contemporary with
the town wall at Thubursicu Bure, built by the prefect Thomas under Justin II, was based on a superficial comparison of the masonry tech-niques, in particular the use of opus africanum. In both cases, how-ever, the opus africanum appears to " elong to later phases of repair, a point already made by Saladin though overlooked by Diehl. A second point of discussion centres on the bent entrance in Tower d_. Creswell f s argument that this was a post-Byzantine insertion v'. s based, first, on the apparently shoddy execution of the masonry around the vousr-;oir3 of the arches and, secondly, on his firm conviction thzrc the Byzantines

475.

Gaz. AB. Tip as a (cont.)

and that it stood 16 m. high; internally it was divided into two
parts, and had two intact "barrel-vaulted floors at 9.0 and IS.5 m.
above ground level; internally-splayed arrow-slits pierced the two side walls at ground-floor level, and a window, 1.0 m. wide and 2.40 m. high, was set in the west wall of the northern compartment (see Fig. 3) Tower e_, though not mentioned "by Diehl, still stands in part to 7 m. in height 5 it was 7.60 m. "broad and projected 5.50 m. Tower 1_, which stands only 4 or 5 m. a"bove ground, has an internally-splayed arrow-slit in its east wall. The other towers have either disappeared com-pletely or are now represented only by mounds of rubble.
Chabassiere's plan shows gateways at d_ and k, in the centre of
the west and east walls; Gsell added a further one at Jh, in the upper part of the site. The main gate (n) was set in the centre of the south wall, however, and was flanked by the two towers (a. and in), which stand about 55 ni. apart (Fig. 4l). The arch was still intact when Dr. Shaw visited the site in the 1730s; in Chabassiere*s drawing (3., pi. X, fig. 8), however, only the western spring of the arch survives;
and by 1893 the whole of it had fallen (4_). According to Gsell, the entrance was flanked by a pair of buttresses, 1.60 m. broad, which pro-jected 2.0 m. from the wall; presumably these carried some kind of superstructure (£; J3).
In the upper corner of the enceinte stand the remains of a struc-
ture (jf) measuring 14 x 6 m., which Diehl interpreted as a Byzantine (4_). However, the smaller more irregular masonry of the building is quite different from that of the rest of the enceinte, and it would therefore seem more likely that it is of later date. Three internal walls running from east to west across the enclosure have at times been interpreted as Muslim defences protecting the upper part of the site. Of Chabassiere's wall with its two flanking bastions running between Towers e_ and j_, however, there is no convincing evidence; and the smaller of the enceintes shown on Gsell's plan (j[) appears to be no more than a stock enclosure of relatively recent date. More convin-cing, however, is the cross-wall shown on all three plans (3.; 4.; £), which encloses the upper 0.22 ha. of the site. This is represented today by a scarp with a mass of rubble lying just below it; in places,

477.

Gaz. AB. Tubunae (cont.)

nomads moving northward from the Saharan Atlas and the Ziban have to pass. Roman roads linked the town with Ficiuibus (N'gaous) and Lamasba (Ksar Belezma) in the north-east via the Oued Barika valley, Ain Tout a and Thamugadi in the east by a roiite passing south of the mountains of Belezma, Thabudeos in the south-east and Zabi in the north-west.

The fort is represented today by a rectangularly shaped platform,
which dominates the plain. The walls that once enclosed it have now been mostly quarried away, though the tell which had formed within them has been preserved against excavators and stone looters on account of a Muslim cemetery which covers the summit. Excavations by Lt. Grange in 1900-1901 (8_ - ll) enabled a more accurate plan of the fort to be produced than those previously available (cf. 3.; 6_, plan VI;]_, fig. 48). The fort was rectangular in shape, measuring internally 62.0 x 80.5 m. (0.50 ha.), and was flanked by eight rectangular towers. The walls were between 1.90 and 2.05 m* thick, and stood in places to over 6.50 m. in height. They were built with a double facing of ashlar blocks enclosing a core composed of river boulders bonded with lime mortar; the masonry included fragments of Roman columns, cs/pitals, cornices, sarcophagi and inscriptions. Al-Bakri states that inside the fort was a large cistern, fed from the Oued Tobna (cf. Soule, in Gsell 1902b, 86).
The corner towers (a,, b_, £, d_) measured on average 7»10 x 7.00 m.
and, like the other towers, had walls 2.00 m. thick (Fig. 5) They were entered through Z-shaped passages, 1.0 m. wide and 2.15 m. high, which opened from the east and west walls of the fort. In the case of Tower £, which Grange fully excavated, the end of the passage facing into the fort was covered by a lintel and relieving arch, while the end facing into the tower had a flat arch composed of three voussoirs.
The ground floor of the tower was lit by two arrow-slits set in the outward-facing walls of the towers; these were 60 cm. wide and sloped down on the inside. Grange makes no reference to any evidence for a dividing floor. Of the interval towers, that on the south (_f) was 6.70 m. across and projected 4«70 m.; those on the east and west (h, ci) were 6.75 m. across and projected 5*30 m. Tower d_, which was

478.

Gaz. AB. Tubunae (cont.)

excavated, was entered through a door 1.00 m. wide and 2.25 m. high, covered by a flat arch (Fig. 3).
The (apparently only) entrance to the fort was through a gate-
tower (b) on the north (Pig. 6). This measured 8.30 m. across and projected 6.10 m. from the face of the wall. Two archways set 4»10 m, apart marked the positions of the two gates; the method for closing them, however, was not investigated by the excavators. Although the western part of the gate-tower had been destroyed, the arch of the inner gate was still intact and spanned 3.00 m.
This gateway later afforded direct communication between the fort
and the medieval walled town, whose enceinte of toub on a foundation of stone, measuring 760 x 640 m., was built touching the northern faces of Towers a^, b_ and £. Al-Bakri credits the Abbasid Khalif al-Mansiir (754-775) with its construction. Little credence, however, can be given to Grange's view that it represented the line of an earlier Roman wall (8_, 49-64); this is precluded not only by its size (enclosing 48.64 ha.) but also by the fact that the wall appears to have cut through the remains of a Christian basilica, containing rich graves of late Roman or Byzantine date (ll_). Although there can be little doubt of the sixth-century date of the fort, its precise date cannot be determined.

Bibliography:

al-Bakri, 108-110; Ibn Hawqal, 82; al-Idrisi, 109; Istibsar, 82; al-Watwat, 51-52.

(I) Atlas Alg_v 37, 10, add.; (2_) Baradez 1949, photo p. 293;
(3.) Blanchet 1899, 288-293; plan; (4.) Boisnard 1935, 38; (5.) Des-champs 1934, fig. 9; (6.) Diehl 1893, 306-309; plan VI; (7.) Diehl 1896, 202; 250; fig. 48; (8.) Grange 1901, 65-73; pi. opp. p. 26, 46, 66, 68, 71, 72; photo opp. p. 66; (£) Gsell 1900b^ (10) Gsell 1901(2), 374-375; fig. 163; (11.) Gsell 1901b; (l!2) Guide Bleu 1974, 226; (13_) Masqueray 1886, 61-62; (14) Piese 1885, 382; (15.) Roman-elli 1970, 405; pi. 352b; (l6) Vaysettes 1861, 306; (l£) *Ville 0000, 111.

See Map 3, no. 66,
Figures 3, 5, 6, 42,
Plate LXVIIb.

479.

Gaz. AB.
VPPENNA

Chigarnia (Hr.), 5*agha (Hr.). (lO°25'E 36°10'N) Port

The site of Vppenna lies 6 km. north-east of Enfidaville and within
5 km. of the sea. The fort occupies the summit of a slight eminence, overlooking the plain through which ran the coast road from Hadrumentum to Carthage,
The fort is rectangular, measuring internally about 20 x 41.5 m.
(0.08 ha.), and is flanked by a square tower at each angle. The walls are 1,95 m« thick and stand in places to 4.5 m. in height. They were built of masonry laid in 50 cm. courses, consisting of two fadings of large stone blocks (many of which have now fallen away) bonded into a rubble and mortar core by means of headers. The mortar is sandy, friable, yellow in colour, and contains specks of charcoal. The facing blocks are mostly reused material and include tombstones and a statue base dedicated to the emperor Const ant ine (4_).
The corner towers are roughly 5»60 m « square with walls between
1.40 and 1.75 m. thick. They were entered through diagonal passages (ja, js), covered by lintels (dj, and the ground floors were barrel-vaulted (b_, £, <i). The entrance to the fort was on the south, about 6.50 m. west of tower a,. It was 2.80 m. wide and was strengthened by two small buttresses on the inside. Evidence for a third buttress a little further to the west suggests the existence of a stair or the supports for a fighting platform associated with the gate; however, the inner face of the wall is badly damaged at this point. Belenet also refers to the existence of an outer enceinte.
Precise dating of the fort by documentary means is not possible.
The only references to Vppenna in the Byzantine period are represented by the epitaphs of two of its bishops, Honorius and Baleriolus, found during the excavation of a basilica some 200 m. west of the fort (Duval (N) 1973, 87-106). The plan of the fort, in particular the design of the towers, and the character of the masonry are both typical of Byzan-tine military work. Its small size, comparable to Limisa and Tubernuc, might suggest a post-Justinianic date, although there is no proof of
this.

482.

Gaz. AB. Zattara (cont.)

oblong area the overall dimensions of which were around 250 m. (N-S) x 150 m. (E-W); the area thus enclosed was 2.74 ha.
The wall was built 1.80-2.00 m. thick of reused material including some tombstones (.3,); it was formed by a double facing of large blocks, laid in irregular courses, enclosing a rubble core. Gsell observed eight rectangular bastions (or towers), 5 ra» broad with walls 1.0 m. thick, spaced between 22 and A.2 m. (and in one case 75 m.) apart; of these, only three (a^, (1 and ej were at all well preserved. The masonry of the bastions was slightly more regular than the.t of the intervening walls. Although Gsell represents all the bastions as open-gorge, it is quite possible that excavation would show some of them to have been ordinary rectangular towers. The position of the gate is unknown.
The date of the enceinte cannot be known with any certainty on
present evidence, although it appears likely tha.t it was an official Byzantine work. Two sixth-century bishops of Zattara are documented, Felix, mentioned in 525 and 535> a*id Cresconius, who attented the Council of Constantinople in 553

Bibliography:

Maier, 244 (Zactarensis; Zatarensis).

(I) Atlas Alg., 18, 233; (2.) Bernelle l892a, 79-30; (3) Bernelle I892b, 512; (4) De Vigneral 1867, 27-28; pi. Ill; (5.7 Mehl 1893, 363; (6) Diehl 1896, 288-289; 295; 609-610; pi. 76; (7.) Gsell 1898, 265-267; plan; (8.) Gsell 1901(2), 391-392.

See Map 3, no. 69.
Figure 36,

GAZETTEER AC.
SITESmOBABLY PROVIDED WITH OFFICIAL FORTIFICATIONS IN THE SIXTH CENTURY, BUT FOR WHICH THE EVIDENCE, WHETHER DOCUMENTARY, EPIGRAPHIC OR ARCHAEOLOGICAL, IS NOT CONCLUSIVE.

494.

Gaz. AC.
THABVDEOS

Tehouda (5 53'E 35°48'N) Reoccupation of 4th.-c. fort?

Tehouda is the modern name given to a tell settlement which lies about
16 km. east-south-east of Biskra, on the west side of the Oued el-Abiod, 10 km. south of the point at which it debouches from the Aures. The tell itself is faintly rectangular in shape. Baradez noted the remains of an enceinte of reused antique blocks surrounding it, which he sugges-ted might be part of the Roman castrum. This perhaps is the stone ram-part referred to by the author of the Istibsar. On the south-west side of the tell lies the raised outline of a trapezoidal fort, the interior of which now stands a few metres above the surrounding plain. The fort's sides measure 118 m. (south) 100 ra. (north) x 65 m. (east and west), and its internal area, is some 0.71 ha. The walls are 1.90 m. thick, and were flanked by rectangular towers at the corners. The north-east tower has been partially cleared; it is 5.50 m. square, with walls 1.10 m. thick, and was entered by a diagonal passage. The sides of the fort may have been reinforced with additional towers, but their outlines are not very clea.r except on the south, where the main gateway stood. This was flanked by two towers, standing 3.50 m. apart and projecting 4.0 m. from the face of the curtain wall.
One feature of particular interest is ths/t the fort was built of
fired brick and not of stone. Baradez gives the size of the bricks as 28 x 38 cm. on average, though some attained 40 x 40 cm. They were between 8 and 10 cm. thick, and laid in horizontal courses bonded with yellow mortar; in places, the core of the wall contains large rounded river pebbles.
The interior of the fort is filled with a mass of broken brick and other debris, but was evidently extensively built up. In the north-west corner stand the partially excavated remains of a building, measuring about 14 x 26 m., with walls 1.20 m. thick, which Baradez suggests may have formed part of the principia.
The dating of the archaeological features investigated by Baradez
has still not been resolved, although it would, probably now be a rela-tively simple matter to do so by stratigraphical excavation or even

495.

Gaz. AC. Thabudeos (cont.)

perha.ps by thermo-luminescent dating- of the bricks. For the present, however, comparison of the design and construction will have to suffice. The use of brick as opposed to stone seems to have been the result of a lack of suitable building stone, and thus no inference regarding date can be made on the basis of constructional technique. Similarly, the lack of sufficient published compa.ratiye data precludes, for the time being at least, the use of brick-size as a chronological indicator. When we turn to the layout of the fort, however, it appears that Thab-udeos fits into a group of forts, including Henchir Mdila (Midili ?) and Thuburnica, which may be closely compared with the Valentinianic fort at Alta Ripa (Altrip) on the Rhine (von Petrikovits 1971, fig. 19). While this would suggest that the fort at Thabudeos is fourth-century in origin, it does not preclude the possiblity that it was reoccupied in the sixth.

Two pieces of evidence may tentatively put forward in support of
a sixth-century reoccupation. First, Procopius refers to a town named A«/iou(rt5_ amongst the five towns situated around the Aures that he says were fortified by Justinian; however, the identification of this town with Thabudeos is not beyond dispute (of. Appx. CA). Secondly, two inscription fragments referring to an excofnsulj found near the south-west corner of the fort have been taken by Albertini to relate to the magister militum Africae Solomon; but Desanges draws attention to the fact that the title of exconsul can be found, exceptionally it is true, as early as the fourth century (1963, 59 n. 3; of. Courtois 1949j 41- 43). Thus although on balance the evidence would tend to support the view expressed by Ragot over a century ago that Thabudeos was included in the Byzantine defensive system south of the Aures (cf. contrary
view of Diehl: ^), at least during the period of Solomon's command in Africa, conclusive proof is still lacking (see Ch. III. 7: 207-215).
It was near Tehouda in 683/684 that Sidi Uqba met his death at
the hands of the Moors and Rum commanded by Kusaila (see Ch. II. 8: 1°7)-

GAZETTEER B.
SITES WHOSE STRUCTURAL EVIDENCE SUGGESTS THE POSSIBILITY OF OFFICIAL SIXTH-CENTURY FORTIFICATION.

498.

AD MAIORES

Besseriani (Hr.) (7°30'E 34°27'N) Town wall ?

An elliptical enceinte (500 x 700 m.) encircling the Trajanic fort of AD 104/105; 1800 m. in length and flanked by up to 20 rounded bastions. The wall is 1.50-1.75 ra« thick and constructed with a double facing of dressed stone blocks, including tomb-stones, enclosing a rubble and
mortar core. To the east, it incorporates a triumphal arch, whose
date (of restoration) of AD 267 provides a terminus post quern for the enceinte. Guenin notes a 'Byzantine 1 defensive work (unspecified) north of the fort. There is no conclusive evidence for sixth-century refortifica.tion of the fort itself.

Bibliography:

(I) Albertini 1932, 7; (2,) Atlas Alg., 50, 152; (3.) Baradez 1949, photo p. Il8a; (4.) Baudot 1875, 122-124; pi. XV; (5_) Boisnard 1935, 36; (6) Cagnat 1913, 572 n. 3; (7.) De Torcy 1910, 5-9; 23-24;
(81) De Vivie de Regie 1938; (£) Diehl 1896, 245; 247; (l£) Gueneau 1907, 322-324; plan; (ll) Gue'nin 1909, 208; (12_) Guide Bleu 1974, 448; (33) Marcillet-Jaubert 1976, 9; (14) Ragot 1874, 298;
(1J5) Tissot 1888(2), 530-531; plan.

See Map 5, no. 81.

AGGAR

Sidi Amara (Hr.), Khima (Hr.) (9°31 f E 35°52 f N) Port ?

A Roman peristyled building, perhaps a temple precinct, converted into a square fort (30 x 30 m.), flanked by four rectangular bastions (5-5 x 5.5 m.), which project only 0.35-0.40m. The outer walls are 2.40 m, thick and built of mortared rubble with a double facing of reused ash-lar blocks; the tower walls are 1.00-1.20 m. thick and pierced by
arrow-slits. The entrance, about 2.0 m. wide, is set in a 'bastion 1
(5.50 m. broad, projecting 0.35 m.) in the centre of the north-west
curtain wall. Area of fort, 0.05 ha.

Bibliography:

al-Bakri, 115.

500.

Gaz. B.
BVLLA REGIA

Haramam Derradji (8°46'E 36°34'N) ?

Four distinct elements supposedly relating to the Byzantine defences
of Bull a Regia have been identified during the past 100 years. Neither the published descriptions of these, however, nor the surviving remains can be taken as sufficient evidence for Bulla Regia 's official forti-fication in the Byzantine period:
(i) Lt. Winkler planned a 'town wall 1 in the 1880s which extended
for about 2400 m. and was flanked by rectangular towers placed astride the rampart. The wall varied from 0.90-2.20 m. in thickness and was built of rubble masonry reinforced by (?vertical) divisions made up of large blocks placed every 2.60 m. ("blocage encadre de cordons en grosses pierres de taille, distancees de 2 60"). Gateways were loca-ted on the N, NW, W and S, and were supplemented by a further seven posterns, 1.25 m. wide (4j 17)«
(ii) Tissot records a 'forteresse 1 lying SW of the Jendouba-Bou Salem road. It measured 70 x 90 m. and had polygonal corner towers (Tissot f s text states hexagonal, but the plan shows engaged octogons). The structure was quite recognizable in 1853 > but only the foundation of one of the towers and part of the SE wall remained in 1881, the rest having been used in the construction of the Tunis-Ghardimaou railway (^.5 10; 14; 16). The style of masonry is not described; this enceinte enclosed a massive structure, however, probably a bath-building, which still awaits detailed study (6_).
(iii) The plan made for the Atlas archeologique in 1911 shows a 'forteresse byzantine 1 a short distance NE of the cistern complex on the NW side of the town. This building, of large ashlar masonry, still survives in part as a private house (l_; ll).
(iv) Excavation of the theatre in 1958 provided evidence of its occupation and fortification in either the Byzantine or Muslim period (_3).
Bulla Regia was still the seat of a bishop in 646. It may perhaps be significant that despite the numerous references made by Procopius to the plains of Bulla (BofcXXrie *e6Cov)> never once does he refer to the existence of fortifications at the city.

502.

Gaz. B.

CASAE (ii)
El-Madher (6°23'E 35°38 I N) Fort ?

A rectangular fort, measuring 40 x 50 m. (2_), or 41 x 41 m. (£), enclosing the marabout of Sidi Ali. Walls 50 cm. thick, standing 2-3 m. in height were seen by Blanchet. However, Gsell and Graillot state that the walls were built with a double facing of ashlar blocks and contained reused architectural fragments and tombstones. Rect-angular bastions (3.60 x 3.60 m.) stood at the centre of three of the sides; in the middle of the SE side the main gate stood forward from the wall, its arch representing the only part of the fort still stan-ding above ground (1975) Blanchet marks a postern between the NW tower and the W corner of the fort. Area 0.14 - 0.17 ha.

Bibliography:

(I) Atlas Alg., 27, 141; (i) Blanchet 1898, 332-334; fig. 3;
(3.) Gsell 1901(2), 386 n. 2; (4) Gsell and Graillot 1894, 74-75
(no. 167).

See Map 5> no. 87.

CASTELLVM TIDDITANORVM

Tiddis, Ksantina el-Kdima (6°30'E 36°28'N) Town wall ??

The rampart surrounding the summit of the plateau which dominates the western part of the site appears to be pre-Roman in date. However, Berthier has suggested that the eastern side of it, facing the Roman town, is Byzantine in its present state (2_); this is constructed of reused stone blocks and flanked by an earth-filled masonry tot-rer, measuring 9.0 m. across and projecting 4.5 m. (4_, fig. 29). Evidence for sixth- or seventh-century occupation on any large scale, however, is entirely lacking; of the 15,000 coins from the site, for example, only 7 can be dated to between AD 535 and 645 (Laily 1971, 108-110). It would seem more likely, therefore, that these walls are either 'Moorish 1 or belong to the Hafsid period of occupation of the site.

504.

Gaz. B.
CIVITAS POPTHENSIS

Ksiba, Okseiba (Hr. el-) (8°19! E 36°l8'N) Enceinte

Roughly rectangular enceinte, measuring about 170 x 170 m. (1.82 ha.), built of unmortared stone blocks on the high ground overlooking the Roman town to the west; defended by steep slopes on the N, E, and S; the W side is flanked by rectangular towers, of which three survive; two of these, measuring 4 x 4 m. and surviving to 2.5 m. in height, stand 30.5 m. apart near the N>J angle of the enceinte; the other, also 4 x 4 m., survives to only 1.0 m. A smaller irregular enclosure built of smaller reused material occupies the highest point of the enceinte. Both of these appear to be works of the la.te Roman or Byzantine period.

Bibliography:

(I) Atlas Alg., 19, 37? (!) Berbrugger 1857, 267-268; (3.) Christofle 1938, 267; (4) Felgerolles 1936, 431-432; (£) Guey 1937, 71-72; 104-106; plan; (<5) Mercier 1887, 471-473; pi. VIII.

See Map 5, 91.

COREVA

Dermoulia (Hr.) (9°29'E 36°29'll) Port ?

Rectangular enceinte measuring about 30 x 60 m. and built of reused architectural fragments, lying wedged between the Carthage-Theueste
road and the Oued Siliana. Carton's plan shows a rectangular bastion
placed midway on the S wall, whereas that of Hilaire and Vellard shows only a rectangular corner bastion in the SE. Area of fort: 0.146 ha.

Bibliography:

(l) Atlas Tun. 50, Teboursouk, 95? (!) Carton 1895, 8-10; fig. 1-2; (3.) Diehl 1896, 277; (4) Hilaire and Vellard 1897, 838; fig. 8; Tissot 1888(2), 452.

See Map 5, no. 92.

506.

Gaz. B; Pornos Maius (cont.)

inner enceinte. The area enclosed seems, from this plan, to have been somewhat under 2.50 ha. Nothing remains of the enceinte today (1975).

Bibliography:

(.1) Atlas Tun. 100, Jama, 187; (2.) Duplantier 1911, plan; (3.) Guerin I862(lj, 421-422; (4) Poinssot (L) 1936a, 32.
See Ch. III. 8: n. 20.
Map 5) no. 94

GIGTHIS

Sidi Salem Bou Ghara (ttr.) (lO°41'E 33°32'N) Fort or ribat?

Rectangular fort, measuring 60 x 60 m., partly uncovered "by Lt.-Col. Donau in 1913-14* The walls are "built of reused material including inscription fragments in Latin and Greek. The N and W walls are flanked by centrally placed towers, 3.80 m. broad and projecting 2.60 m. At the NE corner stood a cylindrical tower (tourelle). The entrance was on the east side, and seems to have been of the bent or oblique type. This layout and the structure's coastal situation might suggest its identification as a Muslim ribat rather than as a Byzantine fort.

Bibliography:

(I) Constans 1916, 22; 98; pi. I; (2) Creswell 1940, 27; (3.) Ores-well 1952, 101; (4) Creswell 1958, 176; (5.) Ennabli (A) 1976, 353- 354; (6) Guide Bleu 1971, 389; (7.) Poinssot (L) 1936a, 32; (15)
Tlatli 1971, 63; plan p. 66.

See Map 5, no. 95.

Guelia Bou Atfan (7°25! E 36°15 f N) Fort ?

Roughly rectangular ?fort measuring about 28 x 42 m. overall (0.115 ha.), flanked by a rectangular bastion placed centrally on its E (and longest) side. Walls 1.30-1.50 m. thick, built with two facings of large reused blocks, including fragments of olive-presses, door jambs, inscriptions

507.

Gaz. B. Guelaa Bou Atfan (cont.)

and rusticated blocks, bonded by means of headers into a rubble core.

Bibliography:

(I) Atlas Alg., 18, 200; (2.) Bernelle l892a, 94; (3.) Bernelle I892b, 517-518^ {4JVe Vigneral 1867, 33-34; (£) Diehl 1896, 611; (£) Gsell 1898, 257; Plan.

See Map 5, no. 96.

Guesses (Hr.) (6°43 f E 35°38'N) Town wall

A town wall shaped like an irregular polygon, measuring roughly 350 x 450 m. overall and enclosing 11.5 ha.; flanked by at least 15 rounded bastions, which are broader at the back than at the front. The two gatev/ays are each flanked by a pair of bastions. The walls are built 2.10 m. thick with two facings of roughly shaped blocks enclosing a mortared rubble core. One of the towers contains a (?) reused inscri-bed lintel bearing a fourth-century type of Christian monogram (GIL, 2334, add p. 951) Gsell explains the absence of the usual Byzantine type of masonry by the lack of suitable Roman public buildings to pill-age. However, the size of the enceinte and the design of the bastions suggest a fourth- or early fifth-century date, rather than a Byzantine one; and the site's importance in the late Roman period is illustrated by the discovery there of four Christian basilicas (FeVrier (PA) 1972a, 314-315; pi. CXXVII-CXXX). The town still existed in the eleventh century.

Bibliography:

al-Bakri, 107.

(I) Atlas Alg., 27, 293; (2.) Boisnard 1935, 36; (3.) Diehl 1893, 316- 317; (4) Diehl 1896, 243-244; fig. 51; (5.) Gsell 190l(l), 359-360; (£) Gsell and Graillot 1894, 51-56 (no. 126); (7) Lambert 1923; (8,) Leschi 1940, 147; (i) Payen 1892, 203-204; (lOJ Ragot 1874, 206-207; (II) Romanelli 1970, 405; 407; (12.) Tissot 1888(2), 483.
See Map 5, no. 97.

508.

Gaz. B.
IOMNIVM

Tigzirt-sur-Mer (4°08'E 36°54! N) Town Wall & fort

A town wall running in an irregular fashion across the neck of the pro-montory, enclosing (after coastal erosion) some 3-4 ha., compared with the 10-12 ha. of the Roman enceinte. In the E it consists of a double facing of large stone blocks, enclosing a rubble core, which Pallu de Lessert maintains was not cemented, though this appears doubtful (4.)5 it was 2.10 m. thick. On the W it appears to be represented by a concrete foundation, 3.50 m. thick, which runs about 30 m. into the sea. Between these two points the wall is no longer traceable, though from the plan by Pallu de Lessert, Bourlier and Gavault it seems likely that it was adapted from existing structures; indeed, Pallu de Lessert writes that the building technique was not consistent and in places there was no internal facing. The main gate was placed in a recessed position at the centre of the enceinte; it was 1.56 m. wide and 2.25 m « high. Three other possible gateways were noted, one of which was appa-rently associated with a lintel carved with a Chi-Rho monogram of the type normally attributed to the late fifth or early sixth century (4., fig. 19).
Excavations in the 1950s confirmed the existence of a small rect-angular fortified structure built over part of the forum (.j? - 6.5 8. ~ 2.) 5 it had a central courtyard and was flanked by what appeared to be square bastions on the N and S sides. In the absence of published plans or photographs it is uncertain whether this was an official fort.
The dating of the fortifications at Tigzirt is equivocal and the general character of the via.ll could suggest a local response to the needs of defence rather than mperial initiative. (For identification of town name, see Fevrier (PA) 1976, 777; Laporte 1973; of. contra Frezouls and Hus 1954).

Bibliography:

(I) Atlas Alg., 6, 34; (£) Euzennat 1955, 147-148; (3.) Diehl 1896, 261-262; 262 n. 1; (4) Gavault 1897, 106-110; fig. 16, 19; (5.) Gsell 1901(2), 386 n. 2; 392; (6.) Grenier 1950, 347-349; (7.) G Bleu 1974, 335; (i) Leglay 1954a, 151-152; (£) Leglay 1955, 191.

See Map 5, no. 98.

509.

Gaz. B.

Ksar (Hr. el-) (6°39'E 35°25'N) Port
A rectangular fort situated on the E side of the plain of labous.
The fort measures internally 20 x 40 m. (0.08 ha), with walls 2.30 m. thick, and is flanked "by rectangular towers, measuring about 5 x 5 m. (walls 0.09 m. thick), which project diagonally from its corners; the NW tower was destroyed for road construction in the 1900s. The ent-rance was on the S, in the centre of one of the shorter sides. Masonry not described.

Bibliography:
(I) Atlas Alg., 27, ?3645 (2.) Vel 1909, 264-265; plan.
See Map 5» no. 99

Ksar Ghazelli (Hr.) (8°37'E 36°22»w) Port ?
Rectangular fort, measuring 32 x 38 m. and standing in places to 5 ra-in height. Masonry not specified. Two towers flanked the south side.

Bibliography:
(I) Atlas Tun. 100, Ouargha, 14; (2_) Toussaint 1898, 201.
See Map 5, no. 100.

Ksar Lebna (lO°57'E 36°42'N) Port
A fort of which only one tower was standing, which Guerin took to be Byzantine. Possibly a ri"bat.

Bibliography:
(I) Atlas Tun. 30, Menzel Heurr, 8; (2) Diehl 1896, 297; (3.) Guerin 1862(2), 239;(?) Piese 1885, 532.
See Map 5, no. 101.

511.

Gaz. B. Nagachia (cont.)

Bibliography:

(I) Atlas Tun. 30, Beja, 18; (2) Diehl 1893, 413; (3.) Diehl 1896,
296-297.

See Map 5> no. 103.

Has el-Hammam (l4°20'E 32°37'N) Pbrt ?

Rectangular structure, measuring 17.40 x 18.00 m. (over the walls); flanked "by four rectangular corner towers of unequal size and dispo-sition, three of which cover only one wall. Built with facing of re-used ashlar blocks, enclosing a rubble and mortar core. Interior filled with fallen masonry. The structure may be identified either as a Byzantine fort or as a late Roman or Byzantine fortified farm. In the middle ages, a gate-tower was added to the NW wall, dated by an inscription to A.H. 473/A.D. 1080-81 (cf. al-Bakri).

Bibliography:

(I) Goodchild and Ward-Perkins 1953, 73 n. 61; (2) Hutt 1977, 40 pi. 8; (3.) Levi della Vida 1949; (4) Libyan General Committee 1976, 70; (£) Romanelli 1925, 167; 169-170; plan; fig. 98-99; (£) Romanelli 1970, 399; (7.) Whitehouse 1972, 19.

See Map 5, no. 104.

RVSICADE

Skigda (formerly Philippeville) (6°54'E 36 53 f N) Town wall ?

What remained of the Roman city was almost completely destroyed by the implantation of its French successor in the nineteenth century. Traces of ancient fortifications, flanked by (?rounded) bastions, were observed at the time of Marshal Valee's expedition in 1838, but these are perhaps more likely to have been Roman in origin. As the coastal outlet for Constantina, Rusicade seems likely to have been occupied and fortified in the sixth century; the only tangible pieces of evidence of Byzan-tine activity, however, are a fragment from a Greek inscription (Gsell

513.

Gaz. B,
Sidi Bellaoui (8°58'E 36°25'N) Port ?
'Port 1 "built of large stone blocks and defended by bastions.

Bibliography:

(I) Atlas Tun. 30, Soufc el-Arba, 52; (2_) Carton 1895, 2?8; (3) Diehl 1896, 285. ~
See Map 5, no. 108.

Sidi Bou Goussa (HP.) (8°35'E 36°27'N) Town wall ?
Enceinte built of large stone blocks and flanked by square towers.

Bibliography:
(I) Atlas Tun. 50, Ghardimaou, 108; (2_) Carton 1891, 232.
See Map 5, no. 109.

SILA

Bordj el-Ksar (6°42»E 36°07 f N) Ptort
A square fort measuring 50 x 50 m. (0.20 ha.) and defended by a bastion placed at the centre of each side, standing in the E part of the site; the walls were 1,40-2,10 m. thick and built with a double facing of large blocks; the masonry included reused bolumns, mouldings and frag-ments of olive presses. Poulle refers to an outer enceinte at the S end of the site, extending for about 400 m. and fla,nked by a tower at its SW angle. Deposits of relics, dated to 585 and Indiction XIII, referring to bishops Bonifatius and Emeritus respectively, have been found in a basilica at the site.

Bibliography:
Maier, 200.

(I) Atlas Alg., 17, 333; (2) Cherbonneau 1868, 416-418; (3.) Diehl 1893, 350; (4) Diehl 1896, 287; (5.) Gse11 1 9°5, 2-3; (6.) Guide Bleu 1974, 449; (l) Logeart and Berthier 1936, 237; (£) Poulle 1891, 318.
See Map 5, no. 110.

514.

Gaz. B.
SVA

Chaouach (9°33'E 36°43 f N) Town wall

Town wall built in an irregula.r arc on the edge of a cliff, which delimits its southern side; constructed of reused Roman material, including sculptured fragments, columns, inscriptions, pilasters, etc. The entrance is in the side of one of the square towers which flank the enceinte, its lintel taken from a Roman gateway. Possibly post-Byzantine. Sua had a bishop, Maximus Suensis, in 646.

Bibliography:

Maier, 203.

(I) Atlas Tun. 50, Tebourba, 183; (2.) Gouyac 1894, 324; (3.) Guide Bleu 1971, 241; (£) Poinssot (L) 1936a, 34; (5.) Tissot 1888(2), 294. See Map 5, no. 111.

SVLLECTHVM

Ras Salakta (ll°03'E 35°24'N) Town wall ?

When Boriades liberated the city from the Vandals in 533, it was defen-ded by an improvised town wall, constructed by the inhabitants them-selves by joining together the outer walls of their houses. Evidently there was some kind of gate, because the keys of the city were handed over by the priest and notables. In the eighteenth century, Shaw noted 'the Ruins of a very large Castle, little inferior in Extent to the Tower of London', commanding a small harbour to the SW; the same structure had been noted by al-Bakri in the eleventh century. Guerin gives the size of this rectangular enceinte as 208 x 208 paces (= 7150 x 150 m. or 2.25 ha.); he describes the wall as built with a double facing of large stone blocks enclosing a rubble core.

Bibliography:

Procopius, III, 16, 9-11; 17, 6 (Z^XXexToc).

al-Bakri, 171.

(l) Atlas Tun. 50, Mahdia, 136; (2.) Boisnard 1935, 37; (3.) Diehl 1896,

GAZETTEER CA.
FORTIFIED SITES REFERRED TO BY PROCOPIUS.

Only official Byzantine fortifications are included in this gazetteer; an asterisk following a Greek name indicates that although the fortifi-cation of the site in question is not mentioned by Procopius, it is known from other sources to have "been fortified in the reign of Justinian. Spellings are "based on the Teubner edition of Procopius
(ed. J. Haury; revised G. Wirth), with account taken of the corrections made to the text of de Aed., VI, 7> 1-11 by J. Desanges (1963). When the identification of a site appears to "be straight-fori^ard no discussion is given; for further details, however, reference should be made to the entries in Gazetteers AA, AB and AC,

GAZETTEER CB.
CORPUS OP SIXTH- AND SEVENTH-CENTURY INSCRIPTIONS RELATING TO
(a) THE CONSTRUCTION OP FORTIFICATIONS, AND
(ID) MILITARY MATTERS IN GENERAL.

The inscriptions contained in the first section of this Gazetteer are arranged in roughly chronological order according to the scheme set out immediately below. The dates given are in each case the ones suggested by the information contained in the inscription itself and take no account of other documentary or architectural evidence. For further discussion of the dating of the fortifications themselves reference should be made to the relevant entries in Gazetteers AA, AB and AC.

Notes: 1. The stone measurements relate in each case to width x height x thickness, in that order.
2. In the list which follows immediately belox?, an asterisk indicates tha,t the date attributed to an inscription is based on a partial restoration of the text.

GAZETTEER D.

CONSOLIDATED INDEX OF SITES LISTED IN GAZETTEER AA, AB, AC AND B.

Capitals denote classica-1 names; lower-case letters denote modern names.

569.

I. Notes.

in North Africa ever produced (cf. Oppe 1950, 30; pi. 35-38). Byzantine fortifications are scrupulously omitted from them,
however, even where, as in the drawing of the Arch of Caracalla
at Theueste, they should in reality have existed} they also
receive scant mention in his writings. The letters of the
abba Poiret (1789), relating to excursions made in the vici-
nity of La Calle in 1785-86, are also of little value to the Byzantine archaeologist.
(*18) See, for example, the experiences recounted by Temple (1835), Davis (1862) and Guerin (1862).
(*19) Quoted by Heuron (1956, 7)> from whom much of the following information on French archaeological work in North Africa up
to 1956 is derived.
(*20) Tunisia had become a French protectorate in 1881.
(*2l) See Atlas Alg.; Atlas Tun. 50; Atlas Tun. 100.
(*22) Separate corpora have since appeared for Algeria (ILAlg), Tunisia (ILT) and Tripolitania (IRT).
(*25) Nor was the fact that Africa had been the birthplace of Tert-ullian of Carthage and Augustine of Hippo forgotten by French catholics. When entering his diocese of Algiers, in May l867> Cardinal Lavigerie expressed his purpose as being, 'to make the
land of Algeria the cradle of a great, generous Christian
nation, of another France in a word 1 (quoted in translation
by Knapp 1970, 100).
(*24) Surveying of Roman and medieval hydraulic engineering works
was undertaken by the French adminstrations of Algeria and
Tunisia; the results are published in Gauckler (ed.) 1897}
1902; Gsell (ed.) 1902; _cf. de la Blanchere 1895.
(*25) On the life and work of Ch. Diehl (1859-1944), see Dussaud 1945; Guilland 1945.
(*26) I897a, 236.
(*27) It was not only French writers who adopted such extreme views. J. S. Reid, for example, allows his evident distaste for the Byzantines to cause him to rearrange the chronology of certain
events recounted by Procopius. Writing of Thamugadi., he says,

570.

I. Notes.

'Even when the Byzantines landed in Africa to crush the Vandals in the sixth century, the city was prosperous and populous.
But the arrival of the Byzantines was fatal to it. The moun-taineers came down and destroyed it, and the Greek army found
it damaged and destroyed 1 (1913, 284; cf. 27l).
(*28) On "this ill-fated congress, see Millet 1940.
(*29) See Gaz. CA and CB.

572.

II.1. Notes.
(*15) This figure is based on an estimated population density of 20 p
per km (Courtois 1955, 215).
(#16) Courtois 1955, 220-221.
(#17) Procopius, III, 5, 18. Courtois has shown, however, that Procopius f s estimations of the size of the Vandal army under
Gaiseric as 50,000 (ill, 5, 10) and under Gelimer as 80,000
(Hist. Arc., XVIII, 6) are gross exaggerations, probably based
on a misunderstanding of the r$le of the millenarius in Vandal society (1955, 216-21?).
(*18) Courtois 1955, 232 n. 2.
(*19) This figure is achieved by assuming that the male population aged between 20 and 60 years would have represented about 25^
of the total population (Courtois 1955, 216 n. 5). Jones,
however, arguing that old men, women and children would have sustained abnormal losses during the course of the migration
across Europe, suggests that the fighting force was about
25,000 (1964(1), 194-195). But one can as easily argue the converse, namely that the highest casualities would have fallen
on the armati; and non-cambattant slaves have also to be
accounted for. At all events, the figure seems likely to fall somewhere in the region of 15,000-25,000.
(*20) Procopius, IV, 6, 1-3? Courtois 1955, 232.
(*2l) £f. Courtois 1955, 354-355. Diehl's figure of 30,000-40,000 seems to be an over-estimation (1896, 8-9).
(*22) Courtois 1955, 230-233.
(*25) III, 8, 27j ££• HI, 19, 15? 23, 7-
(*24) Corippus, loh., III, 198-261; Sidonius Apollinaris, Carmina, V, 397-424; Victor Vitensis, I, 41.
(*25) Sidonius Apollinaris, Carmina, V, 399-400*
(*2fi) Id. V, 402-407; Corippus, loh., Ill, 236-238.
(*2?) Procopius, III, 3, 30-35.
(*28) Procopius associates this expedition with that of Basiliscus in 468 (III, 6, 9; 11? cf. Bury 1923(l), 336-337? Stein 1949(l), 390-391). Courtois, however, follows Theophanes in putting it
two years later (Theophanes, _a. 5963? Courtois 1955, 202-204).

579.

II.2. Notes.

(#1) Corippus, loh., Ill, 184-264; Lat. Reg. Vand., 16-17; Pro-copius, III, 9, 6-9; Benjamin 1912; Courtois 1955, 269-2?!;
402; Schmidt(L) 1942, 119-122; Stein 1949(2), 311.
(*2) Courtois 1955, 267-269; 304-310; Stein 1949(2), 251-253.
(*5) He came to the throne in his mid-sixties, Procopius states that he had been a personal guest-friend (££voc) of Justinian
before the latter became emperor (III, 9, 5; cf. Courtois
1955, 397-39^; Benjamin 1913).
(*4-) Because of Hilderic's lack of interest in military affairs, the Vandal army had been led by his nephew Hoamer on its disastr-
ous campaign against the Moors (Procopius, III, 9, 1-3).
(*g) On the Roman aristocracy, see above Chapter II.1. On the eastern merchants, See Procopius, III, 14, 7-8j 20, 4-6. The Vandal presence in the western Mediterranean was evidently not
good for trade, but neither was it so bad as to make the risks
not worth taking (cf. Courtois 1955, 208).
(*6) Cassiodorus, Variae, IX, 1; Procopius, III, 9, 4; Victor Tonnennensis, a. 523, 1; Courtois 1955, 401.
(*?) The political consequences of this rupture both for the Vandals and for the Ostrogoths is stressed by Vasiliev (1950, 337-341;
cf. Stein 1949(2), 253; 259; 264).
(*8) A tacit acknowledgement of Byzantine suzereinty over the Vandal kingdom may be discerned in Hilderic's policy of minting coins bearing the head of the emperor (Stein 1949(2), 253). Gelimer
also accused Hilderic of planning to hand over the kingdom to
Justin I; although shrugged off by Procopius, the accusation
may have had some factual basis (ill, 9, 8-9; 9, 21). There
is no evidence, however, to support Saumagne's speculative
suggestion that Justinian and Hilderic concluded 'une alliance
active concue pour faire front au danger commun [ji._e. the Moors]
qui mena^ait de jeter hors d'Afrique 1'ame meme de la civili-
zation antique 1 (1959,291).
(+9) See, for example, the assessments of Justinian's ambitions made by Diehl (1896, 4-5; 1901, 22-25; 128-135), Bury (1923(2), 26), Stein (1949(2), 278; 280) and Jones (1964(1), 269-271).

584.

II.2. Notes

The Augiensis text appears to be a Byzantine compilation,
made from official Vandal chancery records which have not
otherwise survived (Courtois 1955, 405). It is perhaps
possible, therefore, that the date of 30 August relates not
to the landing itself, but to the day on which the Vandal king
or court heard of it; Hermiana was four days from the coast
(see note 29) and Carthage lay five days' journey from Caput
Vada (Procopius, III, 14, 17).
(*48) Procopius, III, 15, 1-31; Corippus, loh., 366-370; 377-410. (*49) Cf. Gaz. AA, Caput Vada (q.v.)
(*50) Procopius, III, 15, 32-36.
(*51) Id., III, 17, ?• Procopius's choice of stadia as a unit of measurement was probably influenced, like much else in his
writing, by his interest in earlier Greek historians, in part-
icular Herodotus and Thucydides (Bury 1923(2), 428-429; Stein 1949(2), 714)» The measurements that he gives in stadia should therefore be treated with care, since the unit does not neces-
sarily correspond with one that was in use at the time at which he was writing. There are good grounds, however, for thinking that, although such measurements in stadia were generally approx-imations, they were based none the less on known distances measured in more orthodox units. It may be noted, for example, that most of the distances quoted are multiples, or near mul-tiples, of 7 stadia; eg. 7 (III, 19, 23); 35 (HI, 19, l);
70 (IV, 17, 17); 150 [140](III, 20, 11; IV, 2, 4); 200 [210] (III, 17, 16); 280 (III, 6, 10); 350 (III, 17, 8; IV, 15, 12); 7 days' march at 50 stadia per day * 350 (IV, 13, 32-33). In each of these examples it seems likely that the computation in stadia is based on a known or estimated distance in Roman miles, at the rate of 7 stadia per mile, hence 211 m. per stadium (cf. Bureau de la Malle 1835, 167 n.3; Tissot 1888(2), 115; Cour-tois 1955, 250 n.6). Ad Decimum, for example, which presumably lay 10 miles from Carthage, is put by Procopius at 70 stadia from the city (see note 65). In two other examples which can be checked, because the locations are known, Carthage to Mem-bressa at 350 stadia (= 50 Roman miles = 74 km.) compares

585.

II.2. Notes.
favourably with the modern road distance of 77 km. and almost exactly with that of 51 miles given in the Antonine Itinerary (Itin. Ant., 45, 3)} while Carthage to ad Mercurium by sea, at 280 stadia (« 40 Roman miles « 59 km.), also compares reason-ably well with the distance of 63 km. taken from a modern map (IV, 15, 12} III, 6, 10} see also note 59). Almost all of the remaining distances are multiples of 20 stadia: eg. 20 (III, 17, 2-3)} 40 (III, 15, 15} 20} 15)} 60 (IV, 19, 9)}
80 (ill, 17> 7). Some of these may simply be rounded up or down from approximations based on the 7-stadia scale. Since they all relate to short distances, however, it is possible that they were computed directly in stadia, without the help of any intermediate unit of measurement. If such were the case, how-
ever, it remains uncertain whether the stadia employed were
those of 211 m. or the normal Roman stadium of 185 m., of which
there were eight to a mile (cf. Pryce and Lang 1970). All
metric equivalents given in this chapter are calculated on the
basis of 211 m. to a statium.
(*52) Procopius, III, 19, 12.
(«55) id., Ill, 17, 1-5-
(*64) One further reason for spending the nights in towns was that they provided markets where food could be bought. Belisarius
was careful not to offend landowners and did not allow his army
to live off the land (Procopius, 16, 1-8} 17, 6).
(*55) When he does not give measurements in stadia, Procopius gives them in days of journeying for the unencumbered traveller.
Comparison of the African examples with the distances calculated
from modern maps suggests that a day's journey by Procopius's traveller could vary from 32 to 62 km., averaging 43 km.
Sullectum, laying 25 km. from Caput Vada, was therefore less
than a day's journey, but more than a day's march away.
(*56) Procopius, III, 16, 9-H»
(*5?) !£•» HI> 16, 12} cf. Diesner 1968.
(*5s) Procopius, III, 17, 6.
(*59) Id., III, 17, 8. The distance from Sullectum to Leptis Minus is 34 km., and from Leptis Minus to Hadrumentum a further 29 km.

633.

II. Appendix. 1. Notes.
19. Boriades: (ill, 16, 9).
20. Diogenes: (ill, 23, 5).
21. Although no other 6opt><p6poi of Belisarius's household are
mentioned (cf. Ill, 19, 13), we know of a 'upooruarfiG called
John (IV, 5, 6).

22. The dromones were single-banked warships, with an average
complement of 20 men.
23. The transports had a capacity of 3,000 to 50,000 medimni, or
55 to 930 tons (Courtois 1955, 160 n. 2). The variation in capacity was therefore considerable. On average, however,
each ship would have carried 96 men (including 60 crew) and
16 horses.

636.

III.l. Notes.

(*54) Cod. lust., I, 27, 2, 15; 17; 35-
(*35) Id., I, 27, 2, 20; 23; 26; 29; 32.
(*56) Procopius, IV, 21, 9-10; 25, 8.
(*37) Anastasius I, Ed_., 8; 14; cf_. Diehl 1896, 128-129; Jones
1964(2), 59^-
(*58) Cod. lust., I, 27, 2, 20; 23; 26; 29; 32.
(*59) _Cf. id., I, 27, 2, 9-9b. The pay of the African duces under Justinian may be compared with that of the dux of Libya Inferior,
who, in 539> received a basic salary of 50 annonae and 50 capita, commuted for 400 solidi in all, as well as a payment 'in kind'
of 9° annonae and 120 capita, which were commuted for 1,005^"
solidi (Justinian, Ed., XIII, 18). The only comparable data
from Roman Africa concern the dux Mauritaniae, who, under Valen-tinian III, received 50 capita as part of his pay (Valentinian
III, I\Tou., 15 (a.445))- This evidence is discussed by Diehl
(1896, 128-129) and Jones (1964(2), 644; 676-677). Jones also suggests that the commutation of the annona for 5 instead of 4
solidi was intended to replace the quinquennial donative (1964
(2), 670).
(*40) The officia that came under the control of the praetorian prefect
are set out in God. lust., I, 27, 1, 21-42.
(*41) id., i, 27, 2, 21-22; 24-25; 27-28; 30-31; 33-34; cf. Diehl 1896, 130-131; Jones 1964(2), 59^-599-
(*42) Anastasius I, Ed., 2; 14; Justinian, Ed., XIII, 18; Jones
1964(2), 598 n.84.
(*45) See Ch. II.7: 56.
(*44) Groodchild I960; Dyggve 1941* Roman provincial palaces are
studied by Richmond (in Salway (ed.) 1969, 260-279); Roman
peristyled houses in Africa, by Rebuffat (1969).
(*45) Cod. lust., I, 27, 2, la-2.
(*46) See Ch. II.3: 48-49.
(*47) The difficulty in determining with precision the geographical
limits of the provinces of Africa after the fourth century is
made more acute by the fact that they may not have been entirely

651.

III.3. Notes.
Prevot 1975, 155-158, no. 121-122).
(*42) Veyne 1958, 102-109.
(*45) AE, 1967, 554; Fevrier (PA) and Marcillet-Jaubert 1966. For
discussion of the date of this text, which may belong to the
reign of Justinian I, Justin II or Tiberius II, see also AE,
1974, 722; Fevrier (PA) 1968, 209 n.43; 1972b, 165.
(*44) Lucianus: Albertini Tablets, V, 40; 52; VI, 27; IX, 31;
XXV, 18-19; 25. Quadrantius: _Id. , X, 18. _Cf. Courtois,
in Gourtois _et al. 1952, 13 n.2; 198.
(*45) GIL, 18551; _cf. Gsell 1911, 27, 138. I am most grateful to
Elizabeth Fentress for drawing this text to my attention and for further information on the extent of the imperial domains in
the region.
(*46) See Ch. II.1: 20.
(*47) See Ch. II.4: 58-62.
(*48) Fevrier (PA) 1966. Magistri recorded in pagi or castelli are
listed by Veyne (1958, 104). A closer parallel could perhaps
be sought in two castra founded on ecclesiastical land in Italy
in the late sixth century and mentioned in the letters of
Gregory the Great (Reg., VIII, 32 (Aug. 598); IX, 206 (July 599)) Precisely how these castra, at Squillace (prov. Catanzano) and
Gallipoli (prov. Lecce), came to be founded and how they were organized remains obscure, however, and as T. S. Brown points
out, 'the inhabitants were not soldiers (although there may have
been a military presence) but rustici, local country people who.
sought refuge there' (1978, 328; _cf. 332, no. 1-2). Neither
is there any evidence for limitanei in Italy.
(*49) Of- Jones 1964(1), 416-417.
(*50) Johnson (AC) and West 1949, 218-229; Jones 1964(2), 672-673;
Maspero 1912a, 109-112.
(*5l) Cod. Theod., VII, 15, 1. For discussion of this text, see
Jones 1964(2), 651-653; 1968, 293-294; Matthews (JF) 1976,
170-172. The fact that veterans might also be granted lands
formerly belonging to gentiles would appear to support the idea
that Roman colonists were also able to hold lands in the region

656.

III.4. Notes.

(*55) The unenviable task of compiling a final report from the often
inadequate records made by the excavators has fallen to prof.
Jean Lassus (Aix-en-Provence), to whom I am greatly indebted for
his help, in particular for making available to me such original documentation as exists and discussing its possible interpreta-
tions. It should be stated, however, that the views expressed
here do not necessarily correspond in all respects with prof.
Lassus's own, although on points of observable fact we have
tried to ensure that our accounts are in complete accord.
(*56) Breeze and Dobson 1974? 13, table I; Richmond 1955.
(*5?) By this means, for example, the garrison of the fort at Thamugadi
has been put at over 1,000 infantry (Lassus 1969, 86; 1975, 473;
von Petrikovits 1976, 70-72).
(*58) This was done in order to expose the plans of the earlier temples and buildings associated with the spring, which underlie the

fort.

(*59) The layout of those built against the walls is less regular than that of the others, because of the need to accomodate features
of the wall defence, such as access to the towers on the west
and the foundation piers of the staircases flanking the walls
on the north and south.
(*60) Webster 1969, 192-195.
(*61) Idem.
(*62) Von Petrikovits suggests that the ground floors of each row of contubernia would have held 80 men and then doubles this figure
in order to allow for first-floor accomodation as well. He
therefore makes no allowance for the storage of equipment. His
o

figure of 15 m. for the size of the compartments, derived from Lassus's preliminary publication (1969, 86), is also over-
optimistic. More curiously, however, he only counts six rows
of contubernia in the eastern part of the fort (1976, 6t>-72;
fig. 4).
(*65) This is the figure suggested by Lassus, though he assumes that
there would have been six men to each floor (l975» 473).
(*64) XV, 13; of. Maspero 1912a, 70 n.3. The commanding officer was

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(*65) ^ke possibility might also be considered of horses being kept
outside the fort (see n.75)j i n such circumstances, a garrison
of 600 cavalry could be envisaged.
(*66) Lassus: personal communication, 7/1/78.
(*6?) Intended, that is to say, to hold fodder rather than water. The
daily ration of barley for sixth-century cavalry horses is given
in an Egyptian papyrus document as the equivalent of 1.59 kg.
(P. Oxyrh., 2046; Walker 1973, 340; _cf. Jones 1964(2), 629;
673).
(*68) Ewart 1911. I am very grateful to Prof. Colin Wells, University of Ottawa, for discussion of the problems of interpreting bar-
rack buildings in Roman forts and for drawing many of the refer-
ences quoted in this paragraph to my attention. Reference should
also be made to Prof. Wells's own paper on the subject (l977b).
(*6$ Richmond 1968, 82-84; pi. 30b; Walker 1973, 339-340; Wells 1977b, 660-661.
(*70) Frere and St. Joseph 1974, 27 n.4b; cf. Breeze 1977, 454.
(*7l) Wells points out that the space of 0.91 m. between the fore and hind legs would suggest an animal of only about ten hands
(I977b, 661).
(*72) Breeze 1977, 454; Wells 1977b, 663.
(*75) 1975, 58-60; 63-64; fig. 13-14; cf. Wells 1977b, 663.
(*74) IX, 5, 2; Aussaresses 1909, 52 n.4-
(*75) It could perhaps be argued that forts were built in the sixth
century in such a way that they could be used by either cavalry
or infantry; it would seem more probable, however, that the
garrisons established b,y Solomon were intended to be as perman-
ent as the stone-built forts in which they were stationed. The Liocletianic fort of Dioysias (Qasr-^arun) in Egypt provides an interesting parallel for the fort at Thamugadi, despite the difference in date. Its interior of 0.47 ha. contained 54 barrack compartments, each measuring about 3.57 x 4.47 m. internally, arranged around the inside of the fort's walls and in two free-standing rows of six and seven compartments each. They also had a veranaah and, apparently, upper stories. The

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unit stationed at Dionysias was an ala of cavalry. Schwartz, however, interprets the barrack buildings as intended exclusively
for human habitation, suggesting that horses and some of the men of the garrison lived outside the fort (1969, 1-26; plan. 2).
While the stabling of horses outside the fort should also perhaps
be considered at Thamugadi, it might also be worth considering the possibility that horses were stabled on the ground floors at Dionysias. Three or four horses could have been housed in each compartment, allowing 3.57 x 1.49 m - or 3.57 x 1.12 m. respec-
tively to each horse, thereby allowing the size of the garrison stationed inside the fort to be estimated at between 162 and
216 cavalry.
(*76) See Ch. IV, 3: 271-272.
(177) For example, the Nabatean-period stables at Mampsis in the Negev
(Negev 1967, 79-80; fig. 1; 1971, photo p. 168). Other exam-
ples are listed by Christern 1976, 241 n.50.
(*78) Christern 1976, 90-93. Christern also draws the parallel of
the sixth-century fort at Thamugadi (1976, 243).
(*79) Christern's thesis that the so-called "maisons a auges", many of
which appear to be broadly contemporary with the stables at
Theueste, were also xenodochia (1976, 231-244) is strengthened
by consideration of the evidence for the space allotted to
horses in Roman military stables. The alternative explanations proposed for these buildings, however, are rehearsed by N. and
Y. Duval (1972).

(*80) XV, 13; cf. Maspero 1912a, 70 n.3. The seventy mounted Huns recorded at ad Centenarium in 535 might perhaps have represented
two such units. At another point, however, Procopius refers to
a group of twenty-two bucellarii (ill, 23, 5> IV, 13, 2).
(*8l) Some calculations of this type are attempted by Fetrikovits
(1976, 72).

(*82) See Appendix 5. The dividing line between 'forts' and 'town
walls 1 cannot be drawn with any degree of certainty; and al-
though elsewhere (Ch. IV. 3: 278) I have suggested an arbitrary
figure of 1.75 ha., it may be noted that even this is well below

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the size of a fort built for a first- or second-century milliary
cohort (see n.47).
(*85) I am grateful to Drs. A. Fabian and J. E. Pringle for carrying out the statistical tests upon which this statement is based.

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for this purpose (Reg., IX, 121 (Feb. -Apr. 599) 5 _cf. Brown
(TS) 1978, 328-329; 332, no. 4).
(*57) Prentice 1922, 45~48, no. 915; IQLS, 1682; of. Prentice 1922,
48-49? no « 918. Thomas may also perhaps be identified with the *epto£e6TrK referred to in note 29.
(*58) Butler (HC) 1920, 50-52; pi. VIII.
(*59) IGLS, 1630-1631.
(*40) Gaz « GB, Inscr. 41. Compare, however, _CIL(5), 5418; ILCV, 799.
(*4l) Gaz. CB, Inscr. 36.
(*42) Gaz. AA, Limisa (q.v.).
The verb' aedificauerunt need not be taken with strict literal-
ness to mean that the brothers were physically engaged in building the tower. Two men described as stone-masons are,
however, recorded as building a tower in 543 at Halban in Syria;
it seems hardly likely that these two could have been any other
than the master masons (Prentice 1922, 27, no. 871; cf . Butler
(HC) 1920, 18).
(•44) Justinian, Nou_. , XVII, 4 (a. 535).
(*45) IGLS, 2828. This recalls the arrangements made under Aurelius
at Adraha in Arabia, in which eachSexavCa of the town appears
to have been responsible for the upkeep and defence of a sector
of the town walls (Pflaum 1952, 317-318). The building of town
walls in Illyricum in 407 and in the years immediately following
was funded by special levies, the burden of which was shared out amongst the landowners of the province on the basis of their tax assessments (Cod. Theod., XI, 17, 4; XV, 1, 49; cf . Cod. lust., X, 49, 1).
(•46) Reg. IX, 11 (Oct. 598); 195 (July 599).
(*47) Jones 1964(1), 462.
(*48) Procopius, III, 23, 19-21 (transl. Lewing) .
(*49) Gaz. CB, Inscr. 31.
(*50) see Ch. III. 3: 149-150.
(•51) Procopius, III, 16, 9-11; de Aed^, VI, 6, 2-5.
(*92) The evidence that liiehl cites for the local inhaoitants of Mauri-
tania (Sitifensis) building fortifications on their own initia-

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tive after the third centure (1896, 224) relates in fact to
the official policy of founding castella on imperial estates.
The fourth- and early fifth-century fortifications built in Mauritania Tingitania are also almost certainly official works
(_cf. Salama 1954; 1966, 1305).
(*55) Some of the ones more likely to date from the Byzantine period are described in Gazetteer B.

(*54) As suggested above, Diehl's distinction, together with the examples that he cites in support of it, do not give a coherent picture (1896, 223-225).

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Fabricius 192?; Piganiol 1962. The word ducatus is used by
Gregory the Great of Sardinia (Reg., I, 47 (June 591)) > "the
more usual words for denoting the circumscription of a dux,
however, were limes or prouincia.
(*29) There was an important difference, however, between the forts garrisoned be limitanei and those garrisoned by comitatenses;
but whether there was also a significant geographical distinction between areas garrisoned by one or the other type of troops
cannot be determined in the present state of knowledge (see Ch.
III..4; 158-166).
(*50) Cod. lust., I, 27, 2, 8.
(*51) It is only when disturbances required the intervention of the forces of the magister militum Africae that they are ever likely
to have been recorded in contemporary sources. On the dispersal
of provincial forces to their various garrison posts after a
campaign, see Gh. 11.6:77—78. Musters of troops from the castra surrounding Rome and Ravenna under their duces in the seventh
and eigth centuries are listed by T. S. Brown (1978, 327).
(*52) See Gh. II.5: 72-73-
(l*55) The fact that forts were also placed on the sites of former Roman towns on account of their ready supplies of building
materials (see Ch. IV. 2:253) might perhaps be ta_ken as an
argument against this view. In the present state of archae-ological research, however, the condition of urban life in
African cities in the sixth century remains largely a matter
for conjecture (see Ch. III.8).
(*34) See Ch. III.l: 119. Troops were also used for enforcing Just-inian's religious policy (Diehl 1896, 434-449; Markus 1966,
143-144)•
(*55) The argmuent advanced by van Berchem that the siting of Roman garrisons in Egypt was determined by the need to protect the
depots of the annona militaris runs the risk of becoming circular,
quite apart from its other shortcomings exposed by Price (1976,
146-151). By the sixth century, however, annonae and capita
were commuted for money payments. Transport and storage costs

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were thus reduced and garrisons were able to purchase their own foodstuffs directly from the local producers. Alternatively, the governor of a province was empowered to order the inhabi-tants of certain villages to provide for a garrison's require-ments, and the quantity of corn and fodder rendered in this way was subsequently off-set against tax (Jones 1964(2), 670-674). (*56) Salama 1951, 100-103. Cf. Map 7.

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Division 1943(l), 52-63. The sharp contrast that Courtois saw between the Romanized plains and the barbarous mountains has
been blunted somewhat be recent survey work in Mauritania
Sitifensis, which has produced evidence for extensive Roman penetration of the mountains (Leveau 1975)*
(*5l) de Aed. VI, 7, 2-8.
(*52) There is an obvious need for archaeological survey in Numidia
to determine the extent of native and Roman settlement in late antiquity.
(*55) Despite a suggestion by Procopius that fortifications may have
been built inside the massif (IV, 20, 22), no trace of any has
yet been found there.
(*54) Baradez 1953, 9.
(*55) There is no evidence for Byzantine fortification at Thagaste.
See, however, Gh. III.8:
(»56) III, 19, 32; _cf. IV, 15, 44.
(*57) The cursus publicas ,had continued to function in Africa under
the Vandals (Procopius, III, 16, 12). The courrier Michael,
who is attested at Thabraca, would seem more likely to have
belonged to this service than to the bastagae of the sacraa largitiones or of the res priuata, the organization of both of
which is in any case obscure. Justinian drastically reduced
the scope of the cursus publicus in the eastern provinces; Procopius states that, except along the road leading to the Persian frontier, the number of posts was reduced to one for each day's journey (Hist. Arc., XXX, 1-11; Jones 1964(2),
830-834).
(*58) Gaz. CA, fcfcoaXa (q.v.).
(*59) Seethe discussion of Mauritania below.
(*40) Baradez 1949, 153-156; 1953, 8-9.
(*41) 1896, 245-249.
(*42) The question of Byzantine military occupation south of the
Aures is also discussed by Albertini (1932, 58-59), Courtois
(1955, 69; 326 n.8; 328 n.4) and Desanges (1963, 56-59;
67-68).

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(*g) Maier 1973, 77 J and passim. The oishops of Proconsular!s and
Byzacium in 646 numbered 111 (68 and 43 respectively); how-
ever, the lists for the councils of 2iFumidia and Mauritania of
the same year are lost, only one bishop being mentioned for each
(Maier 1973, 80-84).
(*9) Courtois 1955, 109-112; Maier 1973, 44-63.
(*10) Charles-Picard 1959, 22; Courtois 1955, 109-112; Jones 1964(2),
715-716. It may also be noted that the number of communes
(including communes mixtes and communes de plein exercice)
existing in Algeria and Tunisia in 1943/45 was 445 (Naval Intel-ligence Division 1943(2), 11; 1945, 170).
(*ll) Only 69 places are actually referred to in contemporary sources
as icbXlc, urbs, ciuitas, oppidum or municipium: see Appx. 1,
3 and 4.

(*12) Jones 1964(2), 812-823. Jones points out that the system of
assessing land in Africa by area (measured in centuriae), irres-pective of its productivity, could have been particularly dama-
ging to landlords who owned sub-standard lands (_!.,£., 820).
(*15) Cod. Theod., XI, 28, 13. For the references to earlier discus-
sion of this document, see Lepelley 1967? 138-140.
(*14) Lepelley 1967• It should be borne in mind, however, that the
imperial estates probably represented the better agricultural
land in these provinces; further, that no information survives
as to crop-yields, which could conceivably have been falling.
The extent of the imperial domains in Proconsularis and Byzacium

2 2 in 422 are given in the text as equal to 7?432 km. and 1,620 km.
respectively. In 451? the agri deserti of the imperial estates

2 in Numi di a were estimated as 13,000 centuriae (6,560 km.)
(Valentinian III, Nou., XXXIV, 2; _cf. Jones 1964(2), 816).
If one may assume the ratio of cultivated to uncultivated land
in Numidia to have been roughly the same as those in Proconsularis and Byzacium some three decades earlier, then the total extent
of the imperial domain in Numidia may be estimated at between

2 2 12,988 km. and 16,924 km. There are some grounds, however,
for thinking that the level of desertion in I'Jumidia may have been

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somewhat higher in 451 than were those in the other two pro-

vinces in 422.

(*15) Hist. Hat., XV, 8; jcf. Camps-Fabrer 1953., 18; Haywood 1938, 45.
(*16) Expositio totius mundi, 61; Albertini 1930; Frend 1954, 67-68.
(*17) 1970, 172.

(*18) Addyman 1962, 64? fig. 4« For descriptions and reconstruc-tions of Roman olive-presses, see Christofle 1930b; Gates 1953,
85-87; fig. 3. And on olive-presses of the fifth to seventh centuries in Cyrenaica, see Catani 1976.
(*19) Camps-Fabrer 1953, 18-31; maps.
(*20) It was i n order to bring marginal lands into cultivation, for
example, that second-century emperors granted mancian tenancies,
by which tenants were able to hold newly colonized lands, in particular those supporting olives, vines or fruit trees, as perpetual leasehold. On the granting of mancian tenancies,
see Camps-Fabrer 1953, 22-24; Frend 1954, 66. For evidence
of the continuation of such tenancies into the late fifth cen-tury, see Saumagne, in Courtois et al. 1952, 97-142. The ex-tent and methods of olive-cultivation in Africa in ancient and modern times are discussed in Camps-Fabrer 1953; Despois 1955, 106-110; 297-302; Haywood 1938, 45~50; Naval Intelligence Division 1943(2), 216-218; fig. 55; 1945, 295-297; fig. 59- The expansion of settlement associated with olive-cultivation in Africa is somewhat analagous to the expansion that took place in northern Syria from the first century onwards (Tchalenko 1953(l), 399-400; 406-406). However, the chronological development
and the social consequences of the expansions in these two areas
may not be directly comparable, and great care should therefore
be taken in using the evidence derived from Syria to interpret
events in Africa. For this reason, some of the views expressed
by Frend (1954, 78-79) should be treated with circumspection.
(*21) Decline in some areas may still have been compensated for by expansion in others. An inscription from Vppenna, datable to between the fourth and sixth centuries, records that a pius uir
named Dio had, during his eighty year life-span, planted 4,000

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trees, presumably for the most part olives (1LT, 243). The
importance of olives over other trees cultivated in the area
south of Theueste is illustrated by the fact that the late-fifth-century Albertini Tablets mention olives 178 times, compared with 61 references to figs of various types and 7
to other trees including almonds and pistachios; vines are
also mentioned, but cereals are not (Courtois, in Courtois et al. 1952, 201-202). An economy based on grain and fruit, including olives, however, is suggested by a fourth- to seventh-century prophylactic inscription, written on a lead cross and found
deposited in the channel of an aqueduct at Furnos Maius in Pro-consularis. This text asks that the following crops be spared the calamitous effects of a hail storm (line I, 20): corn
(messes), vines (bineae), gardens (orta), fruits (poma), holm-
or holly-oaks (iliceta) and olives (obiba)(Audollent 1951)•
(*22) Addyman 1962, 64-655 fig. 4.
(*25) Duval (H) 1964. On the basilicas, see Duval (If) 1971d;
Duval (N) and Baratte 1973, 31-59; 75~78; 99-101; 104-111.
On the effects of economic diversification on settlement types
in Byzantine Italy and Sicily in the sixth to eleventh centuries,
see Guillou 1976. A most striking parallel to the kind of
urbanism found at Sufetula in the sixth and seventh centuries is represented by Gaucana, a port on the southern coast of Sicily. This settlement, occupied from at least the fourth to the seventh century, consisted of a scatter of individual houses and some churches covering some 6 ha. The houses were small and of one
or two storeys, set around a central courtyard, somewhat anal-
agous to those transformed into fortlets at Sufetula in the sixth century (Guillou 1976, 171-172; Felagatti 1966; 1976). I am
also grateful to Dr. R. J. VSiilson for discussing this site with
me. See also Ch. II.2: 37 n.45 (on Caucana) and Ch. IV.3: 271-272,
(on the fortlets at Sufetula).
(*24) This problem is commented upon by N. Duval (1964? &7~90j cf. Fevrier (PA) 1970, 165).

(*25) Maurin 1967. See also note 23. A pattern of fourth-century

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prosperity followed by gradual urban decline seems to have occurred at another town, the municipium Thadduritanum, lying mid-way between Thuburbo Maius and Membressa (Atlas Tun. $0,
Bou Arada, 45? Ferchiou 1977b). The removal of agricultural processes, in this case corn-drying, to the town centre is also; recorded in Britain, at Verulamium in the early fifth century
(Frere 1966, 97-98; Wacher 1974, 220-222; fig. 52).
(*26) See Ch. II. 1: 26-32,
(*2?) This process, to which encouragement was given by the victory
of Islam in North Africa, is discussed by Frend (1954).
(*28) The material state of Byzantine Africa is discussed by Diehl
(1896, 382-407).
(*29) See Ch. II.4: 63.
(*50) See Gh. II.7: 87.
(*5l) See Ch. II.7: 89-95.
(*52) The picture of Herclius's reign as a period of prosperity is
drawn by Belkhodja (1970), who ascribes it to the benefits of Maurice's reforms.

(*55) See Ch. II.5* 68 • Malta as well as Sicily may have received
some of these fugatives (Brown (TS) 1975* 73). Known refugees
to Constantinople included the priest Paul, who had retaken Hadrumentum for the emperor in 546 (Procopius, IV, 23, 29) and,
at a later date, the poet Corippus (cf. Cameron 1976, l).
(*54) See Ch. II.7: 89 n.28.
Metcalf 1962.

The principal reason for the relative scarcity of data seems to be the lack, until recently, of an adequate system for reporting and recording hoards discovered other than in the course of archaeological excavations. The evidence from the seventh century, particularly at the time of the Arab invasion, is easier to interpret than that of the sixth century, partly because of the somewhat larger number of hoards documented but more especially because after 581/582 the Carthage mint took to dating its issues according to the indiction. Because of this, it has been found possible, for example, to date a hoard of

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268 solidi,found in 1972 in excavations at Rougga, near Thysdrus in Byzacium, very precisely to the year of the Arab incursion of 647. I am most grateful to M. R. Query of the Institut d'Archeologie Mediterraneenne, Aix-en-Province, for communicating to me the draft text of his report on this hoard and for allowing me to make use of his catalogue of sixth- and seventh-century Byzantine Hoards from Tunisia (cf. Query,
Morrison and Slim, forthcoming). In Appendix 6, with further assistance from M. Query, I have expanded the list so as to
include hoards found elsewhere in Worth Africa as well as some
others whose termini post quos lie inside the sixth century
although before 533. Hoards of the Byzantine period found in
(... Sardinia are discussed somewhat superficially in a paper by
A * •"•••- Rowland (1977, 95~96; fig. 14).
L 4C-(? (#57) See Ch. II.4: 63-64 and Ch. II.7: 95-96.
(•58) Hist. Arc., XXIII, 20.
(•39) For a convenient summary of the effects of the Black Death on
fourteenth-century Europe, see Ziegler (P) 1970. On the problem
of interpreting the references to plagues in the fifth century
and the effects that they may conceivably have had on the popu-
lation, and hence on the economy and society, of late Roman
Britain, see the opposing arguments advanced by Wacher (1974,
414-422) and Todd (1977).
(*40) See Ch. II.4: 59.
(*41) Nou., VI (a..570).
(*42) Kou., XIII5 cf. Jones 1964(2), 800-801; 8l8$ Diehl 1696,
397-398.
(*43) Jones suggests that it may have been the plague of 543 (1964(3),
270 n.112).
(•44) 1964(2), 803.
1\ (*45) Theophanes, _a.6lOO. Cf. Ch. II.8: 98. The 'sweet gifts of Bacchus ... (which) fertile Africa send(s)' (dulcia Bacchi//
munera, ... // ... //" ... quae fertilis Africa mittit) are also
attested at the table of Justin II (Corippus, lust., III, 67-90;
transl. Cameron).

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13 Dec. 587, aged 10 (?) years (AE, 1928, 35; Albertini 1929; Marrou 1953, 217 n.10); Theueste, Eulogios Anatolikos (Lancel 1956, 326-327; fig. l); Sullectum, John, whose parents came from Apamia in Syria, died aged 9 months (GIL, 11106). Some other examples, collected by Devreesse (1940, 156), are less certainly of Byzantine date; indeed, one of them, Maxima from Tripoli in Syria, who died at Tipasa in Mauritania, is more
likely to date from the Vandal period (Albertini and Leschi
1932, 84-86, no. 2; Baradez 1952, 77; fig. 3).
(*67) The main features are summarized by N. Duval (l971e).
(*68) On the latter, see Carton 1895, 281-284.
(*69) Diehl 1896, 391; Duval (fl) and Fevrier (FA) 1972, 38; Saladin
I887a, 8-11; 21; 29-31; 224; fig. 11, 13-14, 35-37; 1901; Ward-Perkins 1951, 103; Ward-Perkins and Goodchild 1953, 61.
The discovery of the wreck of a ship off Capo Passero in Sicily containing the complete internal fittings for a sixth-century
basilica, suggests that the importation of Proconnesan marble
into Africa would have been more often the result of imperial
patronage than of free commerce (Agnello 1963; Krautheimer
1975, 280). The Byzantine capitals reused in the mosques of
Tunisia are at present being studied by L/i. Harrazi of the I.U.A.A,
(*70) Excavation of marble chippings from under the pavement of the
church of St. Polyeuktos, at Sarachane in Constantinople, for
example, has shown that the Proconnessan marble fittings of the
church built during the reign of Justin I were finished in sita (Harrison 1973, 297).
(*71) Duval (N) 1977b; Tavano 1974. A form of church-decoration
which does not seem to have been influenced from outside Africa
and which developed in the sixth century was that in terracotta plaques bearing relief representations of saints, religious
motifs and Biblical scenes (Courtois 1952; Ferron and Pinard
1952; Truillot 1959)* ^ne stamped bricks of the lower Loire
region, datable to a period between the sixth century and the Norman conquest of the area, may well have been inspired from Africa, even though in their form and iconography they appear

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or 6 m. were of opus raixtum (de Jerphanion 1928, 148-153).
(*1Q) In the Saxon Shore fort at Pevensey, the sections are also
about 20 m. in length (Johnson 1976, 58). The same feature
occurs in tne Long Wall in Thrace (Harrison 1974, 246; pi. 26b).
(*19) The separation of towers from the curtain wall is recommended by Philon of Byzantium for this reason (V, A, 62-63). The practice
seems to have become common in the later Hellenistic period
(McNicoll 1971, 24).
(*20) Hurst 1975, 36.
(*21) Delattre 1892, 259.
(*22) Harrison 1974, 246; Jenkins and Megaw 1932, 71; of. Ovcarov 1977, 471.
(*25) Vitruvius, II, 5; Davey 1945, 105-106; 1974, 194. A comparison of Roman and Byzantine mortars and construction methods is made
by Mango 1974, 11-20.
(*24) Diehl cites (1896, 148, n. 5) Procopius's reference to the forti-fication of Martyropolis, in Armenia, as a parallel for the walls
built in Africa. In fact there is no resemblance between them
at all. At Martyropolis, there already existed a town wall four
feet thick and twenty feet high. Justinian therefore constructed another wall four feet thick, four feet in advance of the first,
and filled the intervening space with stones and mortar; on top of this solid foundation, twelve feet thick, the wall was carried
up a further twenty feet (de Aed_., Ill, 2, 11-13). Evidently
the two four-foot (1.26 m.) walls were solid enough to sustain
the lateral thrust of the liquid mortar until it had dried; had
the same technique been attempted with the slighter type of walls
found in Africa, they would have simply burst apart.
(*25) Lassus suggests that earth was used instead of mortar at Thamu-gadi (1969, 78; 1975, 464); but the walls stand 15 m. high and
are only 2.50 m« thick, an impossible feat unless they were bonded
with mortar of some kind.

(*26) Mci\ficoll 1971, 24-25. However, Philon of Byzantium advocates the use of metal cramps or mortar (V, A, 8): also wooden tie-beams
as a precaution against stone-throwing engines (V, A, 13; Garlan
1974, 340-342).

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(Procopius, de Aed., IV,.4, 3} Bace 1974), and numerous Bulgar-
ian sites (BoSkovic 1970; Trifunovic (ed.) 1969, passim; Kod-
dinott 1975, 237-336).
(*42) Examples include Madara in Moesia II (Hodainott 1975, 261; pi. 162), other sites in north-eastern Bulgaria (Ovcarov 1971; 1977,
470); Cyrrhus (van Berchem 1954a, 267-268; pi. XXIV) and
Sergiopolis in Syria (Kollwitz, Wirth and Karnapp 1954, 93-97;
pi. 23-24; Karnapp 196«; 1970. For sites in Cyrenaica, see Goodchild 1966, 232-250; and for a discussion of the types of
masonry employed in post-classical fortifications in Greece,
see Andrews 1953, 221.
(*45) Mango 1974, 11-20.
(*44) For example, in the town walls of Britain and Gaul built during the third and fourth centuries (Butler (RM) 1959).
(*45) Winter 1971, 69-100; Garlan 1974, 199.
(*46) The differences between the Greek and Italian types of emplecton masonry, described by Vitruvius (II, 8, 7), are discussed by Tomlinson (1961). Tomlinson's interpretation of Vitruvius's
account of Greek emplecton walls is that they consist of 'a solid
core of unbroken stones (i.e. not rubble) arranged in courses and
set in mortar. This core is. bonded to two faces of worked
stones by means of headers and through-stones. As a result of the use of headers and stretchers the surface pattern of the faces (the only part of the wall visible when it was completed) resembles that of woven cloth 1 (Tomlinson 1961, 136). However, Vitruvius! s description was based on text-book accounts rather than on first-hand observation, and in fact mortared walls of
this kind are virtually unknown in Hellenistic fortification,
though the use of headers and stretchers was common in ar^-stone construction. Vitruvius T s purpose was apparently to draw the attention of contemporary Italian builders to the structural
value of building the faces of their mortared walls into the core,
(*4?) Philon of Byzantium recommends the width and height of walls to be 10 and 20 cubits respectively (V, A, 11-12), whereas the de Re Strategica advocates 5 and 20 cubits (XII, 1; cf. Garlan 1^74,
342).

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IV.2. Notes.

(*48) Winter argues (1971, 91-95) that the late acceptance of the use of mortar in fortifications in the Hellenistic world was due in
part to the greater susceptibility of concrete walls to fall
down, either through neglect, as a result of earthquakes or under bombardment. It is true that an earth-filled rampart, such as
those used from the fifteenth century A.I), onwards as a defence
against artillery, will absorb the shock of a projectile better
than one in solid concrete (though the strength of the concrete
is also a factor). However, whether or not the rampart falls
down depends on its thickness and on the solidity of its founda-tions; both these factors are ignored in Winter's argument.
(*49) For example at Volubilis (Jodin 1966) and Carthage (Carton 1912, 169-171; Harden 1971, 31). The Roman Republican wall at, Vtica
was also built with large stone blocks (Lezine 19660, 149)•
(*50) Goodchild 1966, 236; 1971, 180-181; Lauer 1963; Pealey 1967, 143-144; fig. 1, 6-16.
(*5l) 1950, 35-36.
(*52) Trousset 1974, 134; 1975, 46.
(*55) Atlas Alg., 48, 27; Blanchet 1898; Diehl 1896, 246-247; Gsell 1901(2), 370 n.2; cf. scepticism expressed by Baradez 1949, 121.
(*54) Imval (PM) 1946, 96; 163; fig. 12.
(*55) Gavault Ib97, 105-107.
(*56) Barrier and Benson 1908, 22-24; pi. V; Thirion 1957, 206-209; fig. I-
(*57) Goodchild 1954.
(*58) Imval (FM) 1946, 95-
(*59) Fevrier (PA), Gaspary and Query 1970, 72-77; fig. 55~5^.
(*60) Hurst 1975, 36-38; fig. 12. A similar type of construction seems to have been used on the wall of the defended pilgrimage
church at Theueste, of about the same date, although here the
rubble fill was unmortared (Christern 1976, 96-104); the wall
can perhaps be paralleled by that of another fortified church
at Androna in northern Syria, which is aatea to 52d (Butler (HC)
1920, 58-61; illn. 52-56).
(*61) Winter 1971, 135-
(*62) Jenkins and Megaw 1932, 71 •

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IV.3. Notes.
(*1) XI, 1-6.
(*2) None of the surviving military hand-books, of the sixth century describes the procedure for layout out a permanent fort, although
the method of constructing a marching-camp is described by
Maurice (pa) (XII, 8, 22) and in the de Re Strategica (XXI-XXX).
(*3) Diehl's typology (1896, 186-215) may be faulted for this very

reason.

(*4) Systems of linear defence must be excluded from this typology, for the time being at least, because there is as yet no evidence
for their being built in Byzantine Africa. In a rescript of
534? however, Justinian refers to clusuris et burgis and (twice)
to clusuras et fines (Cod. lust., I, 27, 2, 4~4a); but in all
three instances the clausurae in question were existing Roman
frontier works, which Justinian intended Belisarius's army to reoccupy. Although the term clausurae can have any one of a range of different meanings, all associated with the idea of something which encloses or is enclosed, it seems likely that rather than meaning to imply simply 'forts' (cf. TLL, clausura (q.v.), II; Mehl 1096, 144 n.5)» Justinian was referring here to the kind of linear defensive work typified by the secona-century fossata of southern Numidia and Mauritania, of which smaller examples blocking the entrances to valleys have also been found in the Tunisian sector of the limes Tripolitanus (Baradez 19495 Trousset 1974, 62-64; 139-1415 fig- 8, 18).
-r ^

Procopius also associates xXelcrovpai with fortified passes, though it is to the defile itself rather trian to the fortifi-cation of it that he specifically applies the term (de Aed., III, 3, 2; 7, 5; IV, 2, 17). There is, however, as already mentioned, no evidence for the construction of fossata or clausurae (in the sense of linear works) in Byzantine Africa; nor is there any for the military reoccupation of existing Roman works of this kind. Such works, however, were built elsewhere in the empire during the reign of Justinian; for example, in Armenia (de Aed., Ill, 3> 1-6; Mitford 1967), Lazica (de Aed., III, 7? 5), Thermopylae (de Aec., IV, 2, 1-22;

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IV.3. Notes.

(*25) Mahjoubi 1968; Atlas Tun.50, Beja, 131.
(*26) The same arrangement is to be found in the second phase of the late Roman or Byzantine fort at Gasr Beni-Gdem, in Cyrenaica
(Goodchild 1953, 70-71; fig. 16; pi. VI, 3).
(*27) Garlan 1974, fig. 50.
(*28) Procopius, de Aed., IV, 1, 18..
(*29) Note, however, that although it is not strictly speaking a quadriburgium, the Saxon Shore fort built in stone with projecting bastions at Hichborough nas been tentatively assigned to the reign
of Probus (Johnson (JS) 1970).
(*50) Ballistae haa of course been used in a defensive role before the third century, and this fact is reflected in the plans of some
forts such as the Claudian fort at Hodd Kill (Richmond 1968, 73-
74)5 but it was only in the fourth century that they became a
general feature of town and garrison defences (Corder 1955)*
(*31) At Burgh Castle, a Saxon Shore fort built probably in the third quarter of the third century, the transition of styles may be
studied within the same fort; it was begun with rounded corners
ana internal corner-towers, but had external bastions adaed
during the course of construction (Johnson (JS) 1975> 37-40; 98).
(*32) Gichon 1974&.
(*35) Atanassova-Georgieva 1974-
(*54) The fortification of Castra Martis is mentioned by Procopius
(de Aed., 6, 33).
(*55) A 0.06-ha. fort, dated by an inscription to 556/557 (Butler (HC) 1920, 102-103).
(*56) P. Petrovic, in Trifunovic (ed.) 1969, 95; plan p. 96. The walls enclose 0.11 ha.

(*37) A defensive structure at Aggar, with slightly projecting corner towers, may also be Byzantine (area 0.05 ha.).
(*38) Diehl's plan is certainly incorrect, but a more accurate one has yet to be made.
(*39) Comparison of Guerin's and idehl's descriptions of the fortlet at Gululis suggests that this may also have been the case there,
but excavation is needed to clarify the matter.

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IV.3. Notes.
(*40) Diehl identifies such fortlets as -KVpYoxAoreXXa after Procopius's description of the towers built by Justinian at Theodosiopolis
(1896, 156). However, for the reasons explainec below in Section
5, this description seems misleading. Procopius was referring
to three-storeyed towers flanking a town wall and not to unroofed
forts, themselves flanked by towers.
(*41) This is also the case in the late tenth-century castle at Paphos (Cyprus), where the entrance is also of the bent variety (Megaw
1972); and also in the late twelfth-century Crusader castle of Belvoir, where the fifth tower again houses a bent entrance
(Prawer 1972, 300-307).
(*42) The Roman examples of the third and fourth centuries of forts of this type, which are presented by Goodchild (1950, fig. 5),
range in size from 0.036 to around 0.72 ha. The smallest one, Mselletin in Tripolitania, is exceptional and its plan probably derived from the desire of its builders to make it look more
grandiose than in fact it was.
(*45) Woolley and Lawrence 1936, 110-120; fig. 24-25; pi. XXIII, 2; XXIV, 2-3; XXV, 1).
(*44) von Petrikovits 1971, 216; fig. 19.
(*45) ^or example, Senlis, Perigueux and Carcassonne (Butler (Rk) 1959? fig. 4).
(*46) For example, at Apollonia in Cyrenaica, where it was associated with projecting towers. This wall was refortified in the sixth
and seventh centuries (pedley 1967, 143-144; fig. 1, 8-16;
Goodchild 1971, 180-181).
(*47) The different types of Hellenistic wall-traces are described, with numerous examples, in Garlan 1974, 245-250i and- McKicoll
1971, 27-28.
(*48) The same is true at Isthmia, where an arch of the first century was incorporated into the north-east gate of the fortress (Jenkins
and Megaw 1932, 71-73; fig. 2).
(*49) C!f. McMcoll 1971, 13.

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IV.4. Notes.

(*39) ie. 400-500 yaras (Marsden 1969, 91; 117-118 ; _cf. Schilbach 1970, 42). Procopius gives the range as equivalent to two bow-
shots (V, 21, 17). See note 44.
(*40) _Cf. Philon, V, A, 20-24; Vitruvius, I, 5, 2.
(*4l) This calculation is based on the assumption that the range of a

§ ballista fired on flat terrain at an angle of 45 will be 365 m.

(400 yds.) (Marsden 1969, 91), from which the initial velocity _•]
of the bolt may be calculated to be 60 ms. . Marsden states, however, that late Roman ballistae were probably more powerful
than those to which these figures apply; the distances calcu-
lated should therefore be regarded as minima. The equation to determine the distance at which a bolt fired horizontally will hit the ground is
d = v x 0.45177 x /v/s~ where _d represents distance, v represents velocity and _s repre-
sents the height above ground from which the bolt is fired (the
units being metres and seconds). The range of a ballista could
be reduced by not winding it back fully; but this would also
reduce its hitting power, which, after range, was one of its
principal assets.
(*42) The same problem of having to divide one's defensive armament into two parts, one to bombard the enemy at long range, the other
to offer flanking fire for the curtains and bastions at the time
of an attack, occupied the minds of military theorists from the fifteenth century onwards (cf. Hale 1967). Ballistae, however,
were more manoeuvrable than the early types of canon and could probably have performed both functions, though not necessarily at
once, since this would have depended on how many these were in
each tower.
(*4^ The casemates in the Aurelian wall of Rome were 6-7 m. above ground level (Richmond 1928, 402; 1930, 76, fig. 12). On the third-century walls at Beauvais and Senlis, the casemates were
8 and 7 m. above ground respectively, at the same height as the rampart-walk (Johnson 1963, 213-214).
(*44) The Strategicon gives a bow-shot as equal to the width of 150

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IV.4. Notes.

spacing was due to the great length of the wall and the lack of adequate troops to defend it. It is clear from the modifica-
tions that Justinian made to the wall that it was not considered possible for the existing garrisons to hold the wall against a concerted enemy attack in their quarter, without the speedy
arrival of reinforcements (Procopius, de Aed., IV, 9> 6-13).
(•56) I, 5, 4.
(*57) de Aed., II, 5, 3.
(•58) See above, Ch. IV. 3: 279. (•59) Frocopius, IV, 22, 20.

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IV.6. Notes.

fig. 8-18; pi. 27-3Oo For an acclamation from Byzantine Africa,
see Inscription 34*
(*12) See note 9.
(*13) The machicolation over the outer gate v/as added by the French
Army in the late nineteenth century (See Gaz. AA, Theueste (q.v.)).
(*14) One that was to be developed to great effect in the later Middle Ages (cf. Deschamps 1932).
(*15) Garlan 1974, 152; 196; Vfinter 1971, 209-215.
(*16) Winter 1971, fig. 145, 185, 245.
(*17) Breeze and Dobson 1976, 33-35; pi. 4.
(*18) Goodchild and Ward-Perkins 1950, 90; Smith 1968.
(*19) Eg. Richborough earth fort (von Petrikovits 1971, 201).
(*20) Eg. the fourteenth-century gateways of medieval York (RCHM 1972, 41-43). A similar arrangement of an outer portcullis and an
inner pair of wing-doors was used in the Augustian north and
south gates at Aosta, though not in a gate-tower (Richmond, in
Salway (ed.) 1969, 254).
(*21) Hoddinott 1975, 134; 158-1595 fig. 24-25, 29-31. Although these and other examples in the Balkans are described by Hoadi-
nott and other writers as propugnacula, their proportions suggest
that they were in fact towers (Popa 1967, 284). Another late
Roman gate-tower with two barriers (type unspecified), dating to
the early fourth century, has been identified at Singara (Oates
1968, 100; fig. 9).
(*22) The moving parts of Hellenistic gateways have been studied by Winter (1971, 253-268).
(*25) Lassus argues that the slot at Thamugadi was too irregular to have taken a portcullis and suggests instead that it was intended
to take the framework for some other kind of gate. It seems
more likely, however, that the irregularities are the result of weathering. Procopius describes another type of gate system
that Belisarius used in his defence of Rome in 536/537. These
were called lupi, presumably because they resembled wolves' jaws? and consisted of wooden grilles with metal spi.-ces fixed to each joint in the carpentry; they were leant back against the gateways,

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IV.7. Notes.

516, has a cylindrically shaped latrine chamber on the first
floor (1920, 256; illn. 269; ££• illn 275).
(*26) This lies at Yeni Foca, near Izmir. The third floor of the tower has two corbelled features, the first a machicolation
guarding the ground-floor entrance, the second a latrine, which
could presumably have also served as a machicolation in certain circumstances (Weaver 1971, 255; fig. 4; pi. Ila, Hlb, IV a-b) Corbelled chambers, resembling latrines but evidently built with
a purely defensive purpose in mind, are also recorded from the
sixth century. At Bar Qita, in Syria, a watch-tower (dated 551) survives with a corbelled chamber set at the level of the third floor, directly above the ground-floor doorway (Butler (HC) 1920, 189-190). Other examples are listed by Creswell (1969(2),
540-542).
(*27) 1969, 83; 1975, 468-469.

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