

CONTENTS

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CONTENTS

Preface	vi
Abbreviations	viii

I. REGIONAL AND GENERAL SESSIONS

BRITANNIA

1. <i>L. Allason-Jones</i> , Roman and native interaction in Northumberland	1
2. <i>P.S. Austen</i> , How big was the second largest fort on Hadrian's Wall at Bowness-on-Solway?	6
3. <i>P.T. Bidwell</i> , Later Roman barracks in Britain	9
4. <i>A.R. Birley</i> , Vindolanda: new writing tablets 1986-89	16
5. <i>M.C. Bishop</i> , Soldiers and military equipment in the towns of Roman Britain	21
6. <i>T.F.C. Blagg</i> , Architectural benefaction in northern and southern Britain	28
7. <i>D.J. Breeze</i> , The frontier in Britain, 1984-1989	35
8. <i>J.G. Crow</i> , Construction and reconstruction in the central sector of Hadrian's Wall	44
9. <i>C. Daniels</i> , The Antonine abandonment of Scotland	48
10. <i>J.L. Davies</i> , Roman military deployment in Wales and the Marches from Pius to Theodosius I	52
11. <i>N. Fuentes</i> , Fresh thoughts on the Saxon Shore	58
12. <i>P.P.A. Funari</i> , Dressel 20 amphora inscriptions found at Vindolanda: the reading of the unpublished evidence	65
13. <i>C.G. Henderson</i> , Aspects of the planning of the Neronian fortress of legio II Augusta at Exeter	73
14. <i>N. Hodgson</i> , The Notitia Dignitatum and the later Roman garrison of Britain	84
15. <i>S. Johnson</i> , Introduction to the Saxon Shore	93
16. <i>G.D.B. Jones</i> , The emergence of the Tyne-Solway frontier	98
17. <i>A.C. King</i> , The date of the stone defences of Roman Bitterne	108
18. <i>G.S. Maxwell</i> , Springboards for invasion - marching camp concentrations and coastal installations in Roman Scotland	111
19. <i>A.S. Robertson</i> , Evidence for the transport of Roman coins from the Mediterranean to Britain	114
20. <i>D. Sankey & A. Stephenson</i> , Recent work on London's defences	117
21. <i>G. Webster</i> , The defences of the legionary fortress at Viroconium (Wroxeter) c. AD 55-90	125
22. <i>T. Williams</i> , Allectus's building campaign in London: implications for the development of the Saxon Shore	132
23. <i>P.R. Wilson</i> , Aspects of the Yorkshire signal stations	142
24. <i>D. Woolliscroft</i> , Das Signalsystem an der Hadriansmauer und seine Auswirkungen auf dessen Aufbau	148

HISPANIA, GALLIA

25. <i>J.M. Blázquez</i> , Römer und Einheimische in Hispanien während der Eroberungszeit (218-19 v. Chr.)	153
26. <i>R. Brulet</i> , Le Litus Saxonicum Continental	155
27. <i>D. Schaad</i> , Encraoustos: un camp militaire romain à Lugdunum - St Bertrand de Comminges (France, Département de la Haute-Garonne)	170

GERMANIA, RAETIA

28. D. Baatz, Research on the limes of Germania Superior and Raetia 1983-89	175
29. W. Groenman van Waateringe, Valkenburg ZH 1: fabrica or praetorium?	179
30. J.K. Haalebos, Die Legionscanabae in Nijmegen	184
31. A.V.M. Hubrecht & D.W. MacDowall, Money supply and the early date of the Roman military presence at Nijmegen	188
32. C.-M. Hüssen, Das Holzkastell auf der 'Breitung' in Weissenburg in Bayern	191
33. M. Pietsch, Marktbreit - ein neues augusteisches Legionslager bei Würzburg, Unterfranken	196
34. S. Rieckhoff, Der römische Schatzfund von Regensburg-Kumpfmühl: ein Vorbericht	203
35. S. von Schnurbein, Der neue Plan von Altrip	208
36. W.J.H. Willems, Early Roman camps on the Kops Plateau at Nijmegen (NL)	210
37. M.D. de Weerd & S.L. Wynia, The Roman fort at Utrecht	215

NORICUM, PANNONIA

38. C. Ertel, Der Tempel A im Kultbezirk der orientalischen Götter in den Canabae Legionis von Carnuntum	216
39. J. Fitz, Neue Ergebnisse in der Limesforschung des Donaugebiets	219
40. O. Harl, Der Verlauf der Limesstraße im Stadtgebiet von Wien	225
41. S. Jilek, Die Kleinfunde aus dem Auxiliarkastell von Carnuntum	230
42. M. Kaba, Die rekonstruierten und restaurierten 'Thermae Maiores' der legio II Adiutrix	232
43. M. Kandler, Die Legio I Adiutrix und Carnuntum	237
44. H.-Th. Lorenz & Ch. Maier, Preliminary report on the excavation at Gleisdorf (Austria) in 1988-89	242
45. B. Lőrincz, Pannonische Ziegelstempel und die militärischen Territorien	244
46. I. Mikl Curk, Natives, Romans and newcomers in the eastern Alps during the 2nd century (The role of the army in ethnic interaction)	248
47. M. Mirković, Beneficarii consularis and the new outpost in Sirmium	252
48. S. Soproni, Eine spätrömische Festung im Donaubett bei Bölske	257
49. K. Szirmai, Barrack-blocks in the praetentura of the legionary fortress in Aquincum (1987-1988)	259
50. Z. Visy, Lussonium: archaeological excavations 1988-89	263

DACIA, MOESIA

51. B. Böttger, Zur wirtschaftlichen Situation am unteren Donaulimes im 4-6 Jh.	268
52. A. Dimitrova-Milčeva, Zum Problem der Datierung der frühesten Perioden des Militärlagers Novae	271
53. P. Donevski, Durostorum, Municipium Aurelium und das Lager der Legio XI Claudia	277
54. J.G. Garbsch, The oldest military diploma for the province of Dacia	281
55. M. Marcu, Contributions concernant les Daces du Sud-Est de la Transylvanie à l'époque romaine (un problème de géographie historique)	285
56. V. Najdenova, Thracian paganism and Roman religion on the lower Danubian limes	291
57. P. Petrović, Ein Donauhafen von Trajan bei dem Kastell Aquae (Moesia Superior)	295
58. L. Rousseva-Slokoska, Sur le problème du système de fortification de Nicopolis ad Istrum (Mésie Inférieure)	299
59. T. Sarnowski, The headquarters building of the legionary fortress at Novae (Lower Moesia)	303
60. M. Vasić, L'architecture à l'intérieur des camps romains des Portes de Fer au IVème et Vème siècle	308
61. M. Zahariade, An early and late Roman fort on the Lower Danube limes: Halmyris (Independenta, Tulcea County, Romania)	311

ORIENS, AFRICA

62. M. Gichon, When and why did the Romans commence the defence of southern Palestine?	318
63. H.-P. Kuhn, Der Sarazenenattel: zu den Voraussetzungen der Sarazenenfälle am Limes Arabiae	326
64. G. Lordkipanidze & D. Braund, Recent work at Pityus (Pitsunda/Bichvinta, USSR)	335
65. P. Morizot, Les stations de la Table de Peutinger entre Lambèse et Ad Calceum Herculis	337
66. P. Trousset, Les défenses côtières byzantines de Byzacène	347

MISCELLANEOUS

67. M. Browning, Archaeology historicized: Romano-British frontier studies and German historiography at the turn of the century	354
68. P. Connolly, The Roman fighting technique deduced from armour and weaponry	358
69. E. Dabrowa, Dromedarii in the Roman army: a note	364
70. C. van Driel-Murray, A Roman tent: Vindolanda tent I	367
71. H. Jouffroy, La défense des frontières: le point de vue du <i>De Rebus Bellicis</i>	373
72. J.-M.A.W. Morel, Tents or barracks?	376
73. L. Okamura, The flying columns of Emperor Gallienus: 'legionary' coins and their hoards	387
74. L. Petculescu, 'Utere felix' and 'Optime maxime con(serva)' mounts from Dacia	392
75. D.B. Saddington, The origin and character of the provincial fleets of the early Roman Empire	397
76. E. Schallmayer, Zur Herkunft und Funktion der Beneficiarii	400
77. P. Varon, Ius postliminii and the soldier	407
78. M.D. de Weerd, Measuring systems in Roman barges and forts	410

II. THEMATIC SESSIONS

ROMAN AND NATIVE (session organiser: Prof. J.H.F. Bloemers)

79. J.H.F. Bloemers, Introduction to the section on "Roman and Natives"	411
80. D.B. Saddington, The Parameters of Romanization	413
81. D. Braund, Roman and native in Transcaucasia from Pompey to Suetonius	419
82. D. Gabler, The survival of late La Tène settlements in the Roman period	424
83. T. Kolník, Römer und Barbaren im nördlichen Mitteldonauebiet	432
84. M.L. Okun, Pluralism in Germania Superior	435
85. M. Gechter, Die frühe ubische Landnahme am Niederrhein	439
86. W.G. Kerr, Economic warfare on the northern limes: portoria and the Germans	442
87. M. van der Veen, Native communities in the frontier zone - uniformity or diversity?	446
88. J.H.F. Bloemers, Relations between Romans and natives: concepts of comparative studies	451

REALITIES OF FRONTIER LIFE (Session organiser: Dr L.J.F. Keppie)

89. L. Keppie, Armies on frontiers - myth and realities	455
90. B. Isaac, The Roman army in Judaea: police duties and taxation	458
91. M.M. Roxan, Women on the frontiers	462
92. M.E. Snape, Roman and native: vici on the north British frontier	468
93. C.S. Sommer, Life beyond the ditches: housing and planning of the military vici in Upper Germany and Raetia	472
94. M.P. Speidel, The Soldiers' servants	477

THE PROBLEMS OF DESERT FRONTIERS (Session organiser: Prof. S.T. Parker)

95. C.M. Wells, The problems of desert frontiers: chairman's comments on the session	478
96. M. Janon, Remarques sur la frontière de Numidie	482
97. M. Reddé, A l'ouest du Nil: une frontière sans soldats, des soldats sans frontière	485
98. S.E. Sidebotham, A limes in the Eastern Desert of Egypt: myth or reality?	494
99. S.T. Parker, The nature of Rome's Arabian frontier	498
100. E.L. Wheeler, Rethinking the Upper Euphrates frontier: where was the western border of Armenia?	505

The Congress Programme	512
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36. EARLY ROMAN CAMPS ON THE KOPS PLATEAU AT NIJMEGEN (NL)

W.J.H. Willems

In 1986 the Dutch State Archaeological Service (ROB) started a long-term excavation project on the Kops Plateau at Nijmegen. The work is part of the Institute's Eastern River Area (ERA) project, which studies the eastern part of the Rhine-Meuse delta during the Roman period (Bloemers, Hulst & Willems 1980; Willems 1981). Early-Roman occupation on the plateau was established by Dr J.H. Holwerda from the State Museum of Antiquities at Leyden, during his excavations between 1915 and 1921. Holwerda believed he had found the site of Tacitus's *Oppidum Batavorum*, an approximately triangular area of over 4 ha on top of the Kops Plateau (Holwerda 1920; 1921; 1943; Breuer 1931). This identification has remained a problem in our understanding of the early-Roman occupation of Nijmegen, especially during the last ten to fifteen years when new discoveries allowed a better interpretation of the extent and nature of this occupation.

The most prominent early-Roman site in Nijmegen is that of the large Augustan legionary camp on the so-called Hunerberg (Fig.

36.1). It measures over 42 ha and could easily accommodate two legions (Bloemers, Bogaers *et al.* 1979, 25-7, with further literature). The area was already occupied before 12 BC. A cemetery is located to the west of the camp, undoubtedly along a road leading to the river Waal, a branch of the Rhine. Very early in the 1st century a civilian settlement developed between the cemetery and the river. Eventually, this settlement extended eastward over the site of a small, early-Tiberian camp west of the cemetery. The civilian settlement continued until AD 70 and can be identified as the town of *Batavodurum* mentioned by Tacitus and Ptolemy (Willems 1984, 73-6; Bloemers 1989, 183-4). As has repeatedly been argued in recent years (Bloemers, Bogaers *et al.* 1979, 31; Willems 1984, 76), this *Batavodurum* is probably identical to Tacitus's *Oppidum Batavorum*, but that conclusion left the problem of the Kops Plateau unsolved.

Holwerda dug a large number of small trenches there (Fig. 36.2), in which he found various features such as post-holes and various

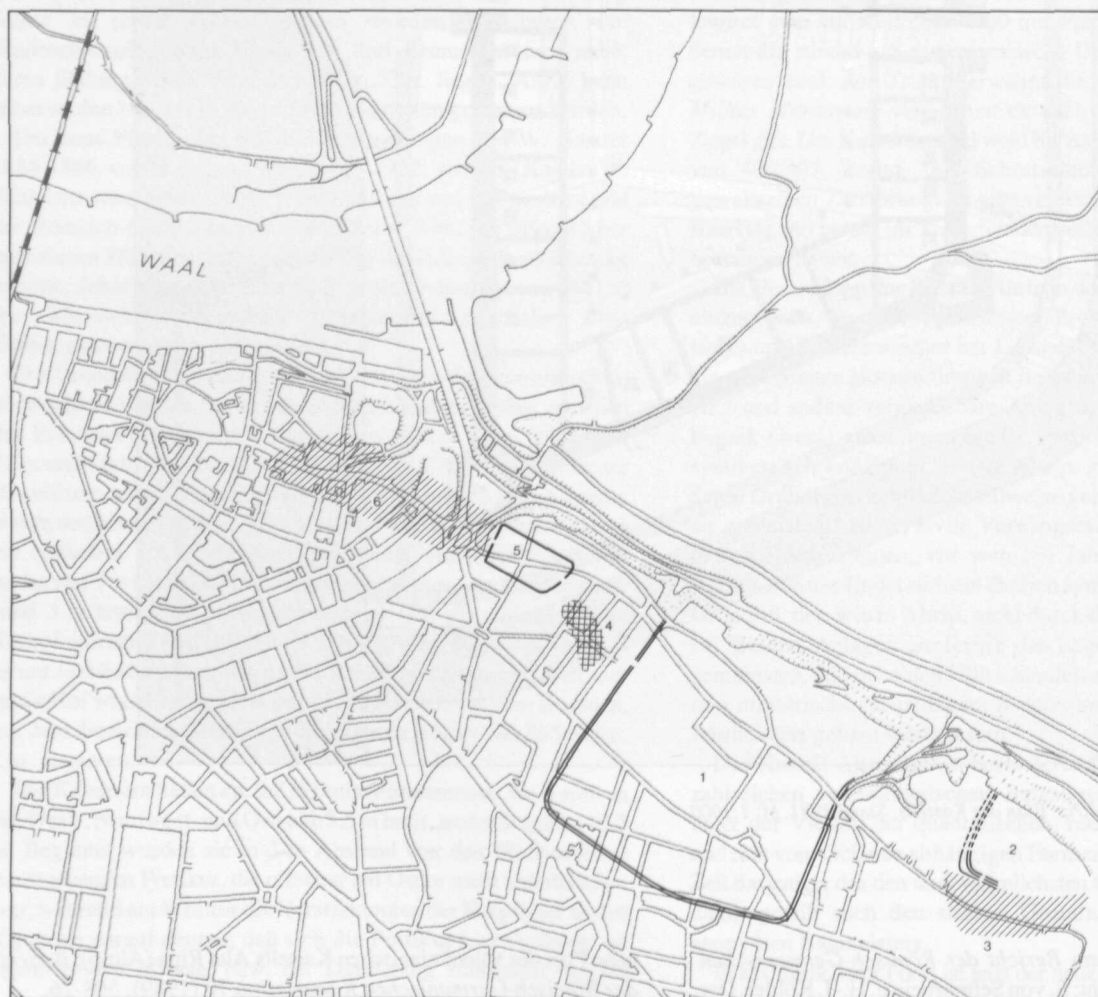


Fig. 36.1. Roman Nijmegen from 12 BC - AD 30: 1-Augustan legionary camp on the Hunerberg, 2-Augustan and Tiberian camps on the Kops Plateau, 3-civilian settlement, 4-cemetery, 5-early-Tiberian camp, 6-civilian settlement (*Batavodurum*).

sorts of ditches and post trenches. From his very first interim report (Holwerda 1917) it is clear that he was convinced he had discovered an *oppidum*, which in that case must be the *Oppidum Batavorum*. He was able to establish the perimeter of the site by tracing the linear features. Trenches, ditches and post-holes were combined in the reconstruction of an imposing hillfort on top of the plateau, with ramparts up to 16 m wide. Final proof for the interpretation came from the finds which indicated early-Roman occupation ending in AD 70, precisely as was to be expected from the *oppidum* of the Batavians.

Holwerda's interpretation did not remain unchallenged. Various scholars expressed doubts as to the accuracy of the reconstruction and pointed out problems, such as the overwhelming proportion of early-Roman pottery among the finds (e.g. Byvanck 1943, 373-4; Glasbergen 1947, 311). Native material was almost completely lacking, which is rather curious for a native hillfort. Unfortunately, the documentation of the excavation did not allow reinterpretation. In 1971, however, a small excavation on the slope of the plateau yielded a well preserved stratigraphy of refuse layers and the finds reinforced earlier suspicions (Bogaers & Haalebos 1975).

The opportunity for new work at the site itself came when its protection under the Dutch Monuments Act was limited to a period of 15 years by the Council of State in 1980. In June 1989, an area of 8700 square metres in the south-western part of Holwerda's hillfort was excavated. As was to be expected, the *oppidum* was not found (Fig. 36.3).

The massive ramparts reconstructed by Holwerda have turned out to be a whole series of regular, V-shaped military ditches accompanied by earth-and-timber ramparts. As is evident from Fig. 36.3, these can be divided into 3 main periods of occupation. The earliest camp (Fig. 36.3, I) is definitely Augustan, and a provisional analysis of the finds indicates that the dating corresponds well with that established for the lower levels of the stratigraphy on the slope of the plateau (Bogaers & Haalebos 1975): approximately 12 BC to AD 10. The first camp was succeeded by a second and slightly larger one (Fig. 36.3, II). The finds include late-Arretine and early-South Gaulish sigillata, and indicate a general dating under Tiberius. Finally, a (probably) smaller camp was built inside the previous one. This third camp (Fig. 36.3, III) must have been in use under Claudius and Nero. In addition, and in contrast to the (published) results of earlier excavations, there are now also Flavian finds from the plateau. These can, however, be attributed to a road and other features belonging to the outskirts of the *canabae legionis* from the fortress of the 10th legion further to the west.

The occupation history of the plateau is rather complicated. In addition to the Roman features there is also a Middle Iron Age village with an urnfield, but neither this nor the Flavian habitation need concern us here. They are mentioned only because they overlap with traces of occupation south of the military installations, presumably the location of the camp-followers (see Fig. 36.1). An analysis of this settlement, which is Holwerda's so-called Batavian

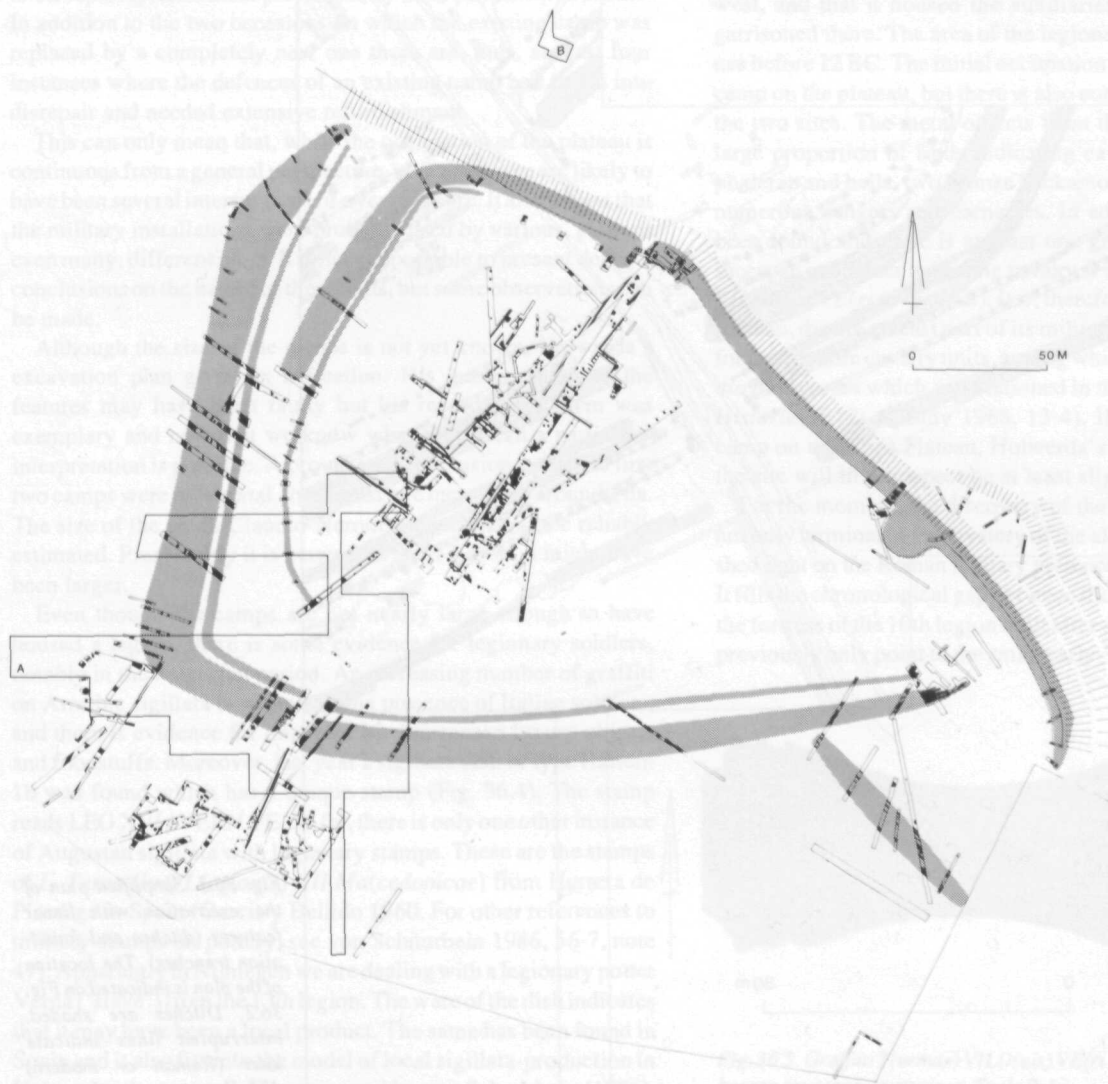


Fig. 36.2. General plan of the 1915 - 1921 excavations on the Kops Plateau (after Holwerda 1921, fig. 1). The alleged walls of the *oppidum* are shaded; A: ROB excavations 1986 - June, 1989, B: excavation in the slope of the plateau (Bogaers & Haalebos 1975).

village, will be rather complicated as a result (Holwerda 1943).

That is not to say that the analysis of the camps themselves is simple. So far, excavations have concentrated on the perimeter where the best information on the stratigraphy and chronology can be obtained. It has become clear that the defences of each of the camps have a number of different phases which, at least in some cases, must be paralleled by changes in the internal layout.

The perimeter of the first camp under Augustus has four different phases. It starts with a single, small 'Haltern-type' ditch

with steep slopes which must have silted up very quickly indeed in the coarse sand of the plateau. Perhaps this is the reason why no rampart has been found. The small ditch was replaced by a double-ditch and a rampart 3.25 m wide with double timber revetment (box-rampart) and a simple, bridge-type gate. Presumably there were towers built flush within the line of the rampart. All subsequent gates excavated so far are of similar design. The ditches are separated by a bank c. 5 m wide.

The third phase is characterised by a similar system of two



Fig. 36.3. Simplified plan of the excavation with linear features (ditches and foundation trenches). The location of the plan is indicated on Fig. 36.2. Ditches are shaded, interrupted lines indicate later (Roman or modern) disturbances.

ditches and various repairs and alterations to the rampart. In this phase, there is a second entrance at the western side of the camp in addition to the southern entrance which remained in use during the entire occupation of the plateau. Although the road-ditches all belong to the camps of period 3, it is clear that the road remained in use from the very beginning.

Finally, a fourth phase is characterized by a single, rather wide and deep ditch and presumably a new rampart. The fill of this ditch indicates that this final camp of the first period may have been destroyed by fire.

The larger camp of the second period shows less extensive alterations. There are two phases in the defences, both with a single ditch and a box-rampart 3.5 m wide. In the second phase the front revetment was at least partially renewed and a new ditch was dug at a time when the first one was nearly completely silted-up.

The smaller camp of the third period resembles the second camp in that it has only one ditch with a 3.75 m wide box rampart. There are at least three phases, the second one reflecting minor repairs while the third phase is constituted by an entirely new ditch and a complete renewal of the front revetment of the rampart. In addition there are two very shallow parallel V-shaped ditches around this camp, the significance of which has not yet been established.

In conclusion, the evidence indicates that in the 80 years of military occupation of the Kops Plateau three different camps were built with no less than nine or ten different phases in the defences. Only two or three of these can be interpreted as normal maintenance or the rapid replacement of provisional by more permanent structures. In addition to the two occasions on which the existing camp was replaced by a completely new one there are, thus, at least four instances where the defences of an existing camp had fallen into disrepair and needed extensive refurbishment.

This can only mean that, while the occupation of the plateau is continuous from a general perspective, in reality there are likely to have been several interruptions of a year or more. It also means that the military installations were probably used by various, perhaps even many, different units. It is not yet possible to present definite conclusions on the nature of these units, but some observations can be made.

Although the size of the camps is not yet known, Holwerda's excavation plan gives an indication. His interpretation of the features may have been faulty but his recording of them was exemplary and now that we know what they mean a partial re-interpretation is possible. A provisional conclusion is that the first two camps were polygonal, the largest one measuring around 4 ha. The size of the small Claudio-Neronian camp cannot be reliably estimated. Presumably it is between 2 and 3 ha, but it might have been larger.

Even though the camps are not nearly large enough to have housed a legion, there is some evidence for legionary soldiers, notably in the Augustan period. An increasing number of graffiti on Arretine sigillata is witness to the presence of Italian soldiers, and there is evidence for imported Mediterranean luxury objects and foodstuffs. Moreover, last year a sigillata dish of type Haltern 1b was found which has a unique stamp (Fig. 36.4). The stamp reads LEG XIII / VERN.FE. So far, there is only one other instance of Augustan sigillata with legionary stamps. These are the stamps of *L. Terent(ius) L(egionis) IIII Ma(cedonicae)* from Herrera de Pisuerga in Spain (Garcia y Bellido 1960. For other references to military stamps on pottery, see von Schnurbein 1986, 56-7, note 47). Apparently in Nijmegen we are dealing with a legionary potter Verna ('slave') from the 13th legion. The ware of the dish indicates that it may have been a local product. The same has been found in Spain and it also fits into the model of local sigillata-production in Haltern by the potter P. Flos proposed by von Schnurbein (1986).



Fig. 36.4. Stamp LEG XIII / VERN.FE on Arretine sigillata dish of type Haltern 1b. Scale 2:1.

The Nijmegen excavation has, incidentally, yielded a quite significant number of these probably locally produced 'Arretine' wares, although the stamp so far remains unique.

It is, therefore, premature to assume that the 13th legion, or part of it, actually stayed in Nijmegen. But this is at least a possibility. There have been various assumptions as to the whereabouts of this legion under Augustus (Ritterling 1925, 1711-2; Schönberger 1985, 343-4) but the only reliable information (Tacitus, *Annals* 1.37) places it in Upper Germany from AD 14 onwards.

Apart from the possibility of legionary troops in the Augustan period, the camps on the Kops Plateau are likely to have housed auxiliary units. It is possible that the earliest camp was contemporary with the huge double legionary camp situated less than 300 m to the west, and that it housed the auxiliaries attached to the legions garrisoned there. The area of the legionary camp was probably in use before 12 BC. The initial occupation is therefore older than the camp on the plateau, but there is also contemporary material from the two sites. The metal objects from the plateau include a very large proportion of finds indicating cavalry: literally dozens of phalerae and bells, two bronze hackamores, parts of iron bits, and numerous hangers and barnacles. In addition, horse-bones have been found and there is at least one graffito on the handle of a saucepan or strainer indicating cavalry (Fig. 36.5). It reads *T(urmae) VILO(nis) VE(ri or -ecundi)*. It is, therefore, possible that the Kops Plateau, during at least part of its military history, served as a base for one or more cavalry units, among which may well have been the *ala Batavorum* which was stationed in the Batavian area (Tacitus, *Histories* 4.12; Alföldy 1968, 13-4). If its base was indeed the camp on the Kops Plateau, Holwerda's original interpretation of the site will in retrospect be at least slightly closer to the mark!

For the moment, the discovery of the camps on the plateau has not only terminated the mystery of the alleged *oppidum*, it has also shed light on the Roman military presence in pre-Flavian Nijmegen. It fills the chronological gap between the early legionary camp and the fortress of the 10th legion built after AD 70, for which we could previously only point to the small early-Tiberian camp close to the

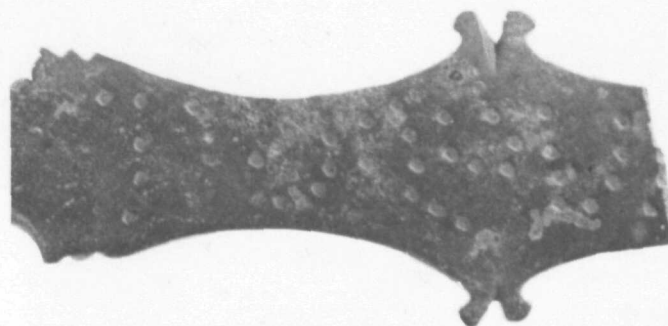


Fig. 36.5. Graffito *T(urmae) VILO(nis) VE(ri or -ecundi)* on the handle of a bronze saucepan or strainer. Scale 2:1.

river Waal. As mentioned above, the occupation of the plateau was probably not without interruptions and we may yet find other pre-Flavian camps in Nijmegen. But in a general sense the gap, which was rather curious for a military and tribal centre such as Nijmegen, has been bridged.

A provisional interpretation of the role of the successive camps in the context of early-Roman Nijmegen can also be proposed. Obviously, the Augustan camps must have functioned somehow in relation to the campaigns in Germany. As shown by pollen analysis from samples from the slope of the hill, the environment of the plateau was drastically altered in this phase (Teunissen & Teunissen-Van Oorschot 1980). The plateau, which was originally covered with fairly thick and little disturbed oak and birch woods, was almost completely cleared. The reason for this clearance cannot only have been the use of wood and military considerations. There is indisputable evidence for large scale grain production in the pollen diagrams, indicating local production for - and in all probability by! - the army.

The camps of the second period can perhaps best be seen as the garrison of *Batavodurum*, the frontier town that was gradually transformed into the central place for the Batavian tribal area. The plateau may have been the major military centre in this region during the crucial period when the tribal area was transformed into a *civitas*. The environment was changed again in a rather drastic way after AD 10. The Tiberian camps were not surrounded by cornfields but by pastureland. This palynological evidence for *prata* can probably be connected to the evidence for cavalry in the fort. It may also illustrate a development whereby, from the second decade AD onwards, direct army involvement with arable was no longer necessary. There were fewer troops in Nijmegen needing to be fed, production by the local population may have increased so that the surplus could be bought, and supply-routes from Gaul may have been more firmly established.

When, under Claudius, the *limes* was constructed along the lower Rhine, the situation on the plateau altered once more. The garrison was apparently reduced in size because the last camps are much smaller, but the site remained in use until AD 70. Apart from a slight increase in arable farming, its surroundings did not alter greatly.

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BIBLIOGRAPHY

- Alföldy, G. 1968 *Die Hilfstruppen der römischen Provinz Germania Inferior*. Epigraphische Studien, Bd. 6 (Düsseldorf).
- Bloemers, J.H.F. 1989 Acculturation in the Rhine/Meuse Basin in the Roman Period: some demographical considerations, in J.C. Barrett, A. Fitzpatrick & L. Macinnes (eds), *Barbarians and Romans in North-West Europe from the later Republic to late Antiquity*. British Archaeological Reports S-471 (Oxford), 175-97.
- Bloemers, J.H.F., Bogaers, J.E. et al. 1979 *Noviomagus. Auf den Spuren der Römer in Nijmegen* (Nijmegen).
- Bloemers, J.H.F., Hulst, R.S. & Willems, W.J.H. 1980 A Short Introduction to the Eastern River Area (ERA) Project, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 30, 277-80.
- Bogaers, J.E. & Haalebos, J.K. 1975 Problemen rond het Kops Plateau, *Oudheidkundige Mededelingen RMO Leiden* 56, 127-78.
- Breuer, J. 1931 Les objets antiques découverts à Ubbergen, près Nimègue, *Oudheidkundige Mededelingen RMO Leiden* 12, 27-121.
- Byvanck, A.W. 1943 *Nederland in den Romeinischen tijd* (Leiden).
- García y Bellido, A. 1960 L. Terentius, figlinarius de la Legio IIII Macedonia, in *Hommages à Léon Herrmann. Collection Latomus* 44, 374-82.
- Glasbergen, W. 1947 De periodisering van de Romeinse occupatie, in *Een kwart eeuw Oudheidkundig Bodemonderzoek in Nederland. Gedenkboek A.E. van Giffen* (Meppel), 299-312.
- Holwerda, J.H. 1917 Oppidum Batavorum, *Germania* 1, 105-11.
- Holwerda, J.H. 1920 De Batavenstad en de vestiging der legio X bij Nijmegen, *Oudheidkundige Mededelingen RMO Leiden* 1, 1-26.
- Holwerda, J.H. 1921 De Batavenburcht en de vesting der legio X bij Nijmegen, *Oudheidkundige Mededelingen RMO Leiden* 2, 57-78.
- Holwerda, J.H. 1943 Een Bataafsch dorpje bij het Oppidum Batavorum uit de jaren voor Chr. geb., *Oudheidkundige Mededelingen RMO Leiden* 24, 35-58.
- Ritterling, E. 1925 Legio, in *RE* XII, 1211-829.
- von Schnurbein, S. 1986 Halterner Sigillata-Produkte in rheinischen Stützpunkten, *Germania* 64, 45-59.
- Schönberger, H. 1985 Die römischen Truppenlager der frühen und mittleren Kaiserzeit zwischen Nordsee und Inn, *Bericht der Römisch-Germanischen Kommission* 66, 321-497.
- Teunissen, D. & Teunissen-Van Oorschot, H.G.C.M. 1980 The Development of the Environment of the Kops Plateau, near Nijmegen, since Roman Times, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 30, 255-75.
- Willems, W.J.H. 1981 Romans and Batavians. A Regional Study in the Dutch Eastern River Area, I, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 31, 7-217.
- Willems, W.J.H. 1984 Romans and Batavians. A Regional Study in the Dutch Eastern River Area, II, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 34, 39-331.