Roman Pottery Finds in Heerlen, Province of Limburg

Heerlen is the only place in the Netherlands where one is apt to lose count when trying to assess the number of pottery kilns that have been discovered. Nevertheless few publications have appeared on this topic. A fairly detailed account has been given of some kilns, but most of them have been disposed of in a brief report in the Maasgouw. In the majority of cases the excavated pottery has been discussed inadequately and depicted sketchily, or not at all, so that it is extremely difficult to form a picture of the Heerlen products. A complete survey of them falls beyond the scope of this article and would moreover be hampered by the fact that we do not know, in the case of earlier finds, to what extent the sherds from the kilns have been kept separate from those found in the neighbourhood.

ROMAN KILN IN SCHINKELSTRAAT (J.K.H.)
(pls. xxv–xxvi)

By a fortunate chance a kiln examined by the ROB in 1962 yielded a large number of mostly colour-coated ware specimens. Since ceramics of this kind were obviously not manufactured in the recently discovered industrial site of Lucius, the find enriched the relevant material published by Gielen to a significant extent. This survey can be extended still further by a description of the debris from a pottery find discovered at about the same time underneath St Joseph’s Hospital. The more or less circular kiln in Schinkelstraat belongs to the commonest type of the Roman period, the upright kiln, in which the fire is directly underneath the actual kiln. The entire construction is sunk 1.50 m deep in the surrounding loess soil. A flue for the supply of fuel has not been established, in contrast to the stokehole or workspace, which could not have been roofed in, as there were no post-holes. The furnace was covered by a permanent floor with twenty-two round vent-holes, resting on a tongue-like column projecting from the rear wall. The vent-holes were made partly through the kiln wall and the support so as to limit the heat-absorbing action as much as possible. The connection between the tongue and the oven floor was effected by a kind of ‘swallow-tail’ construction, in which wedge-shaped projections on the underside of the floor locked into notches along the support. The function of this is not at all clear. The excavators thought it was a method of connection, possibly intended to counteract the difference in shrinkage between the support and the oven-floor. In this case one wonders why such a complicated structure was chosen, since the floor could simply have been placed on top of

1 For a list of kilns found up to 1963, see Van Hommerich 1963, 157; for a sketch-map, see Van Hommerich 1961, 14, and Van Es 1972, fig. 83.
2 Goossens/Evelein 1909, 71; Martin 1915, 32; Van Giffen 1948, 223; Gielen 1971a, 84; Gielen 1971b, 140; Byvanck 1943, ii, 333.
3 Byvanck 1947, 32.
4 The kilns published by Gielen (note 2) offer a happy exception. Pottery found in Heerlen but occasionally made elsewhere: Peters 1929.
5 Heerlen land registry Section D: division between 4435 and 4436 and 40 cm east of 6896. Bogaers 1962, 178; Bruijn 1965–6, 174.
6 Gielen 1971a, 84.
7 Bogaers 1961, 88; Van Hommerich 1963, 157; see also p. 264.
8 For a survey of the various Roman types, Corden 1957, 10.
9 Piepers 1971, fig. 2 and 6; Thomas 1894, 17.
10 Bruijn 1965–6, 174.
11 Diary J.E. Bogaers.
the support. This may be an instance of experimentation by the potter.
The floor showed signs of repair. After one or two firings the potter had been obliged to raise the 16 cm-thick kiln floor by 6 cm. In the clay used for this construction small pieces of pottery were found, in contrast to the clay mixed with straw with which the kiln had been built. The kiln wall was still intact up to a height of 1.30 m above the floor of the furnace. Nothing remains of the upper part of the firing chamber, estimated to have been 1.70 m high, so that it is impossible to determine whether the kiln was equipped with a chimney or whether the hot air could have escaped through slits in the upper part of the dome.
The vessels and pottery fragments found on the floor of the firing chamber are preserved in the depot of the Rob together with a number of sherds recovered from the working-space, furnace and in the vicinity of the kiln. From the notes made during the investigation one may deduce that the pot-types represented by not more than one or two sherds were not part of this last kiln batch. Except for a charred rim-fragment of a terra sigillata bowl Drag. 37, probably of Middle or Eastern Gallic origin, the finds consisted exclusively of colour-coated and smooth-walled white earthenware.

A Colour-Coated Ware
The ‘colour-coated’ pottery is executed according to the Stuart a and b techniques\textsuperscript{12}; it is of white paste with dirty surface (varying between Munsell Color Charts 5 YR 3/4, 4/4–8, 5/6–8, and 6/8) regarded as typical of Heerlen products, or of blue-grey. In most cases the latter has a rather blotchy appearance, but a greyish tone preponderates. Many pieces are so soft that the ‘coating’ has worn off completely or partially, in which case the sherd is particularly powdery. This feature is so marked in the

\textsuperscript{12} Stuart 1963, 20.
cognac glasses' (A 4) that they were at first wrongly regarded as specimens of smooth-walled white pottery. The other smooth-walled white products of this kiln, the jars with a conical lip (b i), may also have been colour-coated. In the case of some rejects the outer layer has dark-red patches. Even the paste of these overheated pots is often reddish.

The following types may be distinguished:

1 Large bulbous beakers with a heavy head rim. This shape, represented by close on a hundred rim-fragments as well as some complete pots, is not mentioned in the current literature. It looks like a variant of the Hofheim 26 beaker,14 but the rim is thicker and clumsier than is normal in that type. Two rim shapes, occurring in more or less equal numbers, are to be differentiated: one has an everted rim in the form of a rounded moulding, the other has one or more grooves on the outside. The latter reminds one strongly of certain forms of the Hofheim 26 beaker, which is, however, more finely executed. The pots have invariably exceptional fine particles of dried clay ('sand') dusted over the surface. The height varies from 16 to 23 cm.

2 The Hofheim 26 beaker is represented in its pure form by, among others, a rim/wall fragment decorated with a scale pattern, found in the furnace underneath the floor and hence not part of the last kiln batch. Furthermore some small fragments of this jar with barbotine decoration were found baked into the clay of the floor.

3 Bowls with a flat, outward projecting rim, comparable to the Stuart 210 A and B types. As a rule the bowls of this type, usually made of coarse pottery, are larger than the colour-coated specimens found here (approximately 7 cm high). This shape is extremely rare in colour-coated were. Stuart mentions a coarse bowl with orange-coloured slip. The Hees bowl, plate 3:25c,15 is similar in appearance, but differs slightly since there are no grooves on the upper side of the rim. From the Heerlen kiln some 20 bowls have been preserved. In four fragments the grooves along the upper side of the rim are missing, just as in the bowl from Nijmegen.

4 Beakers of a hitherto unknown type, best described as 'cognac glasses without foot'. As regards shape they most resemble the Stuart 3 beakers with smooth walls and un-profiled rims, which came into vogue especially after the middle of the second century. They differ from these, however, in the rounder shape of the wall and in the base, which is so narrow that most of the beakers are unable or hardly able to stand. They vary in height from 8 to 13 cm. Twenty-five base fragments have been preserved as well as some more or less complete specimens, two or three of which were badly fired. A single specimen exhibits - mostly on the foot, but also on the less well-cleaned parts of the wall - slight traces of dirty orange slip. According to the foot, the beakers may be divided into four separate types:

a Seven beakers have a circular foot, cut off on the underside.

b Fourteen beakers have a base which is flat underneath and trimmed on two opposite sides.

c The foot of three beakers is trimmed along four sides.

d The foot of one beaker is modelled further so that the underside is roundish and tapered off into a point about

13 Van Hommerich 1963, 158.
14 Ritterling 1912.
15 Brunsting 1937.
2.5 cm long. It is evident, especially from this specimen, that the potter did not intend these small beakers to stand. Comparable material for this eccentric form is extremely rare. The only parallel in the Netherlands, to our knowledge, comes from the Waal near Nijmegen. It has been kept for more than forty years in the Gemeentemuseum16

(Municipal Museum); since it was regarded as medieval, it was not transferred together with the other Roman objects from this collection to the Rijksmuseum Karn. It differs from the Heerlen beakers in its small size (height 6.3 cm, mouth diam. 3.4 cm) as well as its fabric. The surface is orange-red; the core, scoured bare at its greatest body circumference by having been rolled back and forth in the river, is light-grey. The point underneath the base

16 Inventory no. C iv, 234.
has not been trimmed but pinched out and modelled slightly. It is precisely this sort of point which reminds one most of the type of pottery usually described as 'candelabrium' or 'balsamarium,' although there are no indications of the actual use to which it was put. However, there are distinctive differences in the shape of the rim, with its outward curve, and the slenderer body. Other examples of this type of small pot are the well-known beakers bought in 1860 from the Houben collection, together with a Lichthäuschen from Xanten, by the Rijksmuseum van Oudheden (State Archaeological Museum) in Leiden. It is a striking fact that at least one of these beakers has a simple, smooth rim like the Heerlen 'cognac glasses.' The function of the Zanten pieces is not clear either. The connection suggested does not seem to exist in reality. The whole looks like a haphazard accumulation of waste from a pottery.

A recently published specimen from Novaesium of a somewhat slimmer model, 12.7 cm high, gives a clear indication of the possible function of the Heerlen beakers. The original fabric of this pot is scarcely recognizable. The colour is light-grey, the surface not too rough; it may have been smooth at the start. It is impossible to determine whether it was formerly covered with slip. After being fired, the entire beaker was covered with an approximately 1 mm thick layer of clay which had been roughened by the addition of sand. The coating reminds one strongly of a crucible, although the typical glazed patches are missing. Usually such a utensil was simply kneaded from a lump of clay, but occasionally fine colour-coated beakers were used as a starting-point for building up a crucible. Here, however, it is a question of ordinary beaker shapes (Stuart type 1 B and 2), so that the remarkable point on the beaker from Novaesium cannot necessarily be regarded as typical of a crucible. One can imagine though, that such a projection would make it easy to seize hold of the pot with a pair of tongs. On the other hand, the Heerlen beaker fits snugly into the palm of the hand if the point is gripped between the index and middle finger and the fingers are curved around the lower wall. Thus its possible use as a drinking beaker should not be excluded.

6 Small rim-fragment of a beaker with vertical rim, similar to that of the rough-walled beaker Stuart 204.

7 Two rim-fragments of pots with sharply angular shoulder and funnel-shaped mouth; two groove-lines on the outside.

One has been coated in a brownish tint on the outside, the other was probably charred, which accounts for its terra nigra-like aspect. At least one of the rims was found in the oven floor partly in its older half. So they must date before the last kiln batch.

8 A lip-fragment and a neck-fragment of jugs with a tall neck and pinched-in spout. Similar jugs have not been found among the material from the castra published in Nijmegen. Their nearest counterpart is a piece from a Heerlen kiln which was destroyed at the beginning of the present century.

B Smooth-Walled White Ware

The smooth-walled white pottery is, to all appearances, made of the same clay as the colour-coated ware. As a rule it is fairly soft and has such a floury surface that a fine white powder rubs off when it is touched. It is not clear whether all the pieces described here as smooth-walled white ware actually fall under this category. The following types may be distinguished.

1 Jars with a conical lip, reminiscent of the type Stuart 113 (= Hofheim 55, Gose 373–375). There is a small difference in the shape of the lip, which does not taper outwards, but is thickened with an extra ridge along the upper side. The feet of the Heerlen jars are moreover somewhat slimmer than that of the example depicted by Stuart. The neck has been put on separately. In a number of specimens the point where it joins the shoulder is clearly visible. The height of the three jars which can be reconstructed varies from 21 to 26 cm. Since the diameter of the remaining nine jar-necks (4–7 cm) shows a larger variation in the case of the complete jars (5–6 cm), this height can only be regarded as approximate. Four rims are furnished with a pinched-in spout, directly opposite the

17 Stuart 1963, type 151 (B); Schoppa 1961, type 71.
18 Brunsting 1963, pl. 5, extreme left.
19 Brunsting 1963, 19.
20 Filtzinger 1972, 29, no. 84.
21 Haalebos 1972, 42.
22 Brunsting 1937, pl. 13, 14; Martin 1915, 49; Mayer 1929, 49, fig. 3, Greene 1972, 22, 40.
23 Gose 1950.
bipartite handle. A single example seems to show scanty traces of an orange coating.

2 Four jar-necks must be considered as belonging to the Stuart type 109 or 110 A. Except in the case of one rim-fragment the upper lip is hardly dominant as yet. As far as can be discerned the handles are composed of three parts. At least two fragments do not come from the kiln but from the stokehole.

3 A number of wall-fragments which fit together must have been part of a large, bulbous pot, to judge by their dimensions. The wall has rouletted decoration. These fragments were found in the vicinity of the kiln before the start of the investigation.

Comparable pieces from a refuse pit at the St Joseph's Hospital in Heerlen remind one of 'Belgian' examples, although the smooth-walled white paste is quite different from them.24

4 Rim-fragments of a dolium, made of the same powdery earthenware as the jars (B 1), but tempered with fine gravel and brick grit just as in the case of three found before the investigation was launched.

Conclusion and dating

The contents of the kiln consisted mainly of four types of pottery. Chief among these is the 'colour-coated' ware: large bulbous beakers (A 1), bowls (A 3) and beakers with tall foot (A 4), all represented by rejects. If the jars, which at first sight could be reckoned among the smooth-walled ware, had also been coated - as seems very likely - the kiln contained only one kind of ceramic. It is remarkable that the kiln contents diverge from the rich store of forms found along the limes of the Netherlands and that, where familiar forms are found, these are executed according to a different technique from that which is usually associated with them.

The main types in the last kiln batch offer little evidence for the purpose of dating as there is a lack of reliable material for comparison. In the provisional report of the find it is assumed that the objects on the oven floor were manufactured between A.D. 70 and 100. The accompanying finds (especially B 2 and A 5) also allow of a possible dating as late as the first part of the second century.25

24 See p. 269.
25 The author wishes to thank J.B. Bogaers for making his notes taken during the investigation available and for his permission to publish this kiln, A. Bruijn for making his field drawings available, and E.J. Ponten for producing the publication drawings.

PIT WITH POTTERS' SPOIL-HEAPS UNDERNEATH ST JOSEPH'S HOSPITAL (J.H.F.B.)

Two pits were discovered in 1961 in the course of reconstruction work in a cellar on the south side of St Joseph's Hospital at Heerlen.26

Since the two pits together were shaped like a keyhole, it was initially thought that a kiln had been unearthed, several of which had been found in the area. This proved not to be the case, although the younger of the two pits was found to contain a very considerable amount of waste products from a potter's kiln. The pit measured c. 2.40 m in diameter; it was still c. 75 cm deep, i.e., c. 3.05 m below the present ground-level. The pottery, of which some 800 rim-sherds have been recovered, provides us with an opportunity of compiling a modest type-series, and of establishing the frequency of those types. That we are dealing with fragments of products made on the spot is shown by various faulty vessels and the remains of slaggy and vitriﬁed oven walls, likewise found in the pit.

At the time when the hospital was built early in this century, a kiln with contents had already been found.27 Several additional finds have been unearthed since 1961, both in the hospital grounds and in the vicinity.28

TYPE DESCRIPTION

Technique A (see p. 260)

1 Cooking-pots (fig. 4: 1–4)

Cooking-pots occur in great numbers in the usual forms. Most are marked with several grooves where shoulder meets neck. Although without further signiﬁcance certain variations can be distinguished in the rim-development: rolled (a) (fig. 4: 1) (31), arched (b) (fig. 4: 2) and ﬂattened (c) (fig. 4: 4). The arched rim is sometimes marked with one or more grooves on the exterior (d) (fig. 4: 3). The height varies between 16 and 26 cm; the diameter of

Fig. 4 Heerlen, St. Joseph's Hospital 1–4: Type A 1; 5–7: Type A 2; 8–13, 15: Type A 3; 14: Type A 4

27 Goossens/Evelein 1909.
the mouth between 11 and 19 cm. A small number of
fault-products occur. The type is difficult to date ac­
found. They display the normal features of the high
3  Pots with rim curved up and inwards (fig. 4: 8–13, 15) These pots have a distinctive rim-profile which is set off from the shoulder by a sharp angle. The interior is in most cases marked with one or more grooves. The diam­
eter of the mouth varies between 11 and 22 cm; small vessels, no more than 6–9.5 cm high, occur in small numbers. Many of these pots are decorated either with a barbotine technique, or with a pinched relief. Ring (a) and scale (b) ornaments are the most common. Grooves, ribs, and raised dots are less frequent. A face or part of a face is represented three times (c). At least 53 fragments have been collected.
The pots resemble Brunsting 1937, 145 and Pl. 7 type 4b2, for which parallels are mentioned dating from the last quarter of the first century to the third century. The rims from Niederbieber, however, are much clumsier than those from Heerlen. The occurrence of the scale orna­
ment, which was abandoned not long after the year 100, may, however, give an important indication for a more precise dating.
4  Bowls with rim thickened on the inside (fig. 4: 14) A very homogeneous group is formed by bowls with rims unmistakably thickened towards the inside. A few grooves mark the exterior. The diameter varies from 22 to 25 cm; the height of the complete vessels is 14 to 15 cm. Fragments of some 22 bowls have been found. Although the model is not far removed from the bowls that are generally indi­
cated by the above description, there are several differ­
ces. The angle between belly and shoulder/rim is placed very high up. The rim is strongly thickened on the inside.
The wall runs in a virtually convex line to the base, where­
as in other types the wall is usually more concave towards the base. Occurring sporadically in the first century, the bowl Brunsting 1937, 148 and Pl. 7 type 9 becomes more common early in the second century. The resemblance to the patina 29 from Neuss is much stronger. The shape corresponds well with the Heerlen bowls. In Neuss this type occurs in the second quarter of the first century A.D.: 430 specimens have been registered there, i.e., it must have been relatively uncommon in Neuss. Of the paral­
lels mentioned, that from Colchester is the most satisfac­
tory, although there are still some differences in detail (Periods III–IV; 43–61 A.D.). Vessels of the same type with slight variations in the detail of the rim-profiles were also produced in Neuss itself.
5  Cooking-pots and bowls with horizontal rim (fig. 5: 4–7) The rim is flat and horizontal or slightly oblique. The rim is marked with grooves; in one case the top is deco­
rated with a wavy line. Grooves also mark the shoulder. The rim could belong to a cooking-pot or a bowl (resp. Stuart 1963, 73 type 202 and 77 type 210).
Since only a few small fragments were found, and no complete vessels, the same observations by Stuart apply to this type. When only small rim-fragments are avail­
able, it is usually difficult to assign them to either of the two forms, cooking-pot or bowl. In view of the straight­
ness of the wall and the slight inversion of the rim, fig. 5: 4 and 6 may belong to cooking-pots, but examples other than these do not exist. Fig. 5: 5 is most probably the rim of a bowl: there are six distinct examples of this. The bowls are characteristic of the period from c. 70 till the third quarter of the second century, but they may occur even earlier. The cooking-pots embrace the period from the beginning to the end of the second century, while the possibility exists that production had already started towards the end of the first century.
6  Plates with horizontal rim (fig. 5: 3) These plates have a horizontal, everted rim, which is thickened towards the inside. At the top the rim is often profiled with one or more grooves: such markings are also often to be seen on the bottom, where rim meets wall.

29  Brunsting 1937, 141 and pl. 7: 1.
30  Brunsting 1937, 149–50, and pl. 7: 12a, and Stuart 1963, 80 type 213A.
31  Oelmann 1914, 72 type 90.
32  Brunsting 1937, 73 and 145.
33  Filtzinger 1972, 17 and Taf. 28: 2.
34  Filtzinger 1972, 90.
35  Filtzinger 1972, 81 and 87 and Taf. 88: 9–11 and Taf. 89 (Ofen 5 and 6).
36  Stuart 1963, 74.
38  Filtzinger 1972, 17.
The wall slants outward, the bottom is strongly curved. The diameter varies between 20 and 26 cm, the height between 4 and 6 cm. Before this plate can be assigned to a particular type, it is as well to refer to Stuart’s notes on the close affinity between the plates Stuart 1963, 82 type 215, and 83 type 216.91 The dates he gives for these types are c. 40-120 and c. 40 to a little after 100, respectively. Vanvinckenroye notes a number of finds from complexes that must still be dated to the first half or even the middle of the second century.40 Although the plates were therefore possibly in use a little longer, it seems justified to assume that actual production ceased in the first quarter of the second century. Approximately twelve fragments occur in this findspot.

7 Lids (fig. 5: 1–2)
The lids have a standing rim and a more or less carefully finished knob. The diameter varies between 16 and 23 cm. Sixteen fragments were found.

Miscellaneous
A brown-varnished wall-fragment of a small beaker Brunsting 1937, 72 and Pl. 3 type 1a occurs only once. The dating there and in Stuart41 is c. 40 and not long after 100 and 110, respectively (fig. 5: 11)
A curious rim of dark-grey varnished ware of a steep-walled beaker (?) (diameter 15 cm) comes closest to the beakers Stuart 1963, 51 type 128, which are made of white pipe-clay (fig. 5: 10). In principle, the quality of the Heerlen fragment is very similar to the Nijmegen fragments unearthed among finds from before and after 70. A neck of an orange-varnished jug with a pinched lip has a sharply profiled and undercut rim; the neck itself is decorated with grooves (fig. 5: 13). Apart from the rim-profile, the jug belongs to the form Brunsting 1937, 150 and Pl. 7 type 13a; the rim-profile itself may be very similar to Ritterling 1912, 319, Abb. 81: 4 (Typus 86), although it is impossible to be sure. In view of the rim, a

39 Stuart 1963, 82.
40 Vanvinckenroye 1967, 61 type 140.
41 Stuart 1963, 20–2.
dating to the last quarter of the first century, as indicated by Brunsting, is likely.

Finally a wall-fragment of a dolium deserves mention (fig. 5: 12). The wall is decorated by a raised band, 6.5 cm wide, bordered with finger-tip impressions.

**Technique B** (see p. 263)

1 Large globular pots (fig. 6: 1)

The diameter of the mouth varies mostly between about 15 and 20 cm; a few smaller pots have a section of 11–14 cm. Little can be said with any certainty about the height. The illustrated example, which has one of the largest openings, stands at least 28–32 cm high. The rim is drawn up and outwards. The shoulder and belly are marked with broad ribs, between which there is a stripe ornament applied with a small wheel-instrument. The rims of about 51 pots have been collected, i.e. 8.1% of the total. Although no such pot was found in the spoil-heap, these pots evidently also occurred in terra nigra, as is shown by a pot from the kiln published by Goossens in 1909.

The model is familiar from Belgian ware, although the latter generally has a different colour: orange-red, light-brown, or terra nigra. It may be compared to Brunsting 1937, 117 and Pl. 6 type 5b, Holwerda 1941, 27 and Pl. 110, and Vanvinckenroye 1967, 28 and Pl. 6: 35b.

Brunsting and Holwerda are apparently referring to the same items (inv. no. ix 0 4 and 5), from the Hees cemetery at Nijmegen (cemetery ww). The quality, which is unusual for Nijmegen, did not escape Brunsting's attention; Holwerda even believed that he was dealing with a product from one of the Heerlen potteries, which were situated close to the findspot of our pots. Brunsting moreover mentions similar pieces from the cemeteries O, E, and S; possibly he is referring *inter alia* to the pots illustrated in Holwerda 1941, Pl. 1:39 and 43, Pl. 11:53 and 55 (0), Pl. 11:120 and 125 (5) which, however, are of a different colour.

Holwerda discriminates clearly between them and the former two. Vanvinckenroye mentions the concurrence at Tongeren of sherds of this model with sherds from the second half or the end of the first century.

2 Small jugs (fig. 6: 11–15)

This type comprises necks of jugs ranging in height from 4 to 5.5 cm, which clearly sets them apart from the jugs discussed below. The height of the neck is usually the same as the diameter of the rim. The one complete vessel has an almost symmetrical curved belly; the total height is 18.7 cm. Of the 39 necks, each representing one jug, seven have a three-part (a), six a four-part (b), and one a five-part handle. The group is remarkably homogeneous.

The type is related to the jugs Stuart 1963, 42 type 108, as far as the neck only is concerned. Even the somewhat different Heerlen jug accords with this, because of its resemblance to Stuart 1963, Pl. 5:87. The shape of the belly of the complete jug, however, fits better with the definition of the type Stuart 1963 type 106, in which case the greatest diameter should be at or under the middle of the belly. This has few implications for the chronology. According to Stuart, both types should be dated to the last quarter of the first century and the beginning of the second century; only type 108 may run a little longer.

3 Large jugs (fig. 6: 6–10)

The height of the neck of this group of jugs varies between 6 and 7.5 cm, the diameter of the rim between 5.5 and 7 cm. These measurements, larger than those of the previous group, suggest that the jugs themselves were also larger, but there are no complete examples or complete profiles to prove this hypothesis. Of the 29 jug-necks 12 have a four-part (b) and 2 a triple handle (a). The lip is not or only slightly everted, and in comparison with the diameter is not high. The neck is clearly set off against the shoulder.

In view of all these characteristics, the jugs bear the closest resemblance to Stuart 1963, 40 type 107, although the illustration Stuart 1963, Pl. 6:94 (type 109) is also very similar. Fragment no. 187 is particularly similar to Stuart 1963, Pl. 5:83 (type 107). The dating for this type is the same as for the former.

4 Amphorae with everted rim (fig. 6: 16)

The distinctive feature of this amphora is the broad, founded, and everted lip, which is accompanied by a curved neck. The handles are apparently always double. Two complete specimens are 40.5 cm and 35.7 cm high. Twenty-one necks or rim-fragments of this type have been found. The lip has too few characteristic features to provide further chronological indications for this complex.

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42 Brunsting 1937, 150.

43 Goossens/Evelein 1909, 75 and a/6. xxxiiic.

44 Brunsting 1937, 118.
5 Amphorae with ring-shaped lip
Of this type, which corresponds with Stuart 1963, 52 type 129, only three examples have been found. The handles are double.

6 Amphorae with pointed lip
The rim section of these amphorae is very similar to that of the jugs described under 2 and 3. The rim is fairly pointed and sometimes undercut. The exterior is usually either slanted inwards or vertical and arched. The neck is cylindrical, slightly conical or curved, and is fairly thin-walled. Decoration consists of two grooved zones, one of which marks the base of the handle. Three-part handles (a) are slightly more frequent than four-part handles (b). There is a total of nine specimens.

In Hofheim this amphora occurs with both lip-variants; the same is true of the Colchester finds. Although in the latter case the handles are somewhat more angular and the number of grooved zones round the neck can vary, the resemblance is striking. It is all the more surprising, then, that the Colchester type is mostly dated to the first half of the first century; its occurrence in periods iv–vi indicates that these amphorae were still current for some time after, i.e., until at least c. 65. Yet this is remarkably early for our complex.

7 Honey jars (fig. 6: 4–5)
The honey jars are of the usual shape. The shoulder is usually marked with two grooves. The handle is always double and fairly small. The rim is not profiled. These features can, in general, be taken as an indication of a dating to the Flavian period. Fragments of about 54 vessels have been found, one sherd being from a fault-product.

8 Mortars (fig. 6: 2–3)
Small (diameter 13–15 cm) and large bowls (diameter 21–24 cm) can be distinguished, both having identical rim-profiles. The quality of the smaller is finer than that of the larger, which are almost coarse-walled. The lip is, as far as could be established, always formed by an applied ridge. The shape therefore accords with Stuart 1963, 66 type 149 B. Fragments of eighteen mortars were found: twelve large and six small. One is a distinctly faulty product.

Miscellaneous
A slender neck of a small amphora, somewhat similar to Vanvinckenroye 1967, 43 and Pl. 12:70, which, however, has a different lip (fig. 5: 9). Also Stuart 1963, 54 type 130 and Pl. 10:162 and 163 show some affinity, although they are larger. It has proved impossible to date them more precisely than to the period between the first and the third centuries.

A large neck of coarse ware, rosier in shade than usual, has even more pronounced disc-flanges widening the neck. (fig. 5: 8). Finally, there is a pointed base of an amphora. Particularly notable is the fact that there are so many three- and four-part handles, which are typical of the jugs and amphorae (with the exception of type B 4 and 5, which have double handles). There is even one example of a five-part handle.

45 Ritterling 1912, 288 type 58, and Hawkes/Hull 1947, 246 Form 161.

46 Brunsting 1937, 108.
Composition and dating

In the assessment of the composition of the total and the numbers of each individual type, the rim-fragments of one and the same vessel were counted as one item, in so far as this was possible. The best results were obtained with the jugs. For the cooking-pots, which are the most widely represented, the attempt was the least successful. The total number of approximately 622 items made up of more than 800 rim-fragments is therefore presumably a high estimate. The totals for every type should indeed be considered as an indication of frequency and proportion rather than as an absolute datum (fig. 7).

The main component of the production of smooth-walled ware consists of jugs (types 2 and 3). The shapes accord with the types which are common elsewhere. Only the definition of the handles varies: often it is made up of four parts instead of three. The amphorae are fairly frequent. The elegant type 6 has been found earlier in Heerlen.\(^{47}\) There, too, the number of four-part handles is remarkable. Honey jars and large globular pots (type B1) occur in considerable numbers; the latter have also been found in the oven examined by Goossens and Evelein.\(^{48}\) Mortars, however, are relatively weakly represented. In the varnished ware the ordinary cooking-pots are by far the most numerous. But also the pots of type 3 represent a sizable portion of production. All other vessels occur in more or less the same numbers. The dating of the complex as a whole is determined mainly by the jugs, due to their shape and number. Their unmistakable affinity with Stuart 1963, type 106–108 dates the fill to the final quarter of the first century, or perhaps even the beginning of the second century. But the relative infrequency of the amphora type B6 (typologically closely related to these jugs), and the bowl A4 (closely related to the patina 29 which occurs so early in Neuss) could, however, indicate a date early rather than late in this time-span (c. 80 a.d.?).

The relatively high percentage (8.1\%) of pots B1 appears to point in the same direction. The large number of pots of type A1, the fairly high percentage (25\%) within the type of the scale-ornamented pots of type A3, and possibly also the small number of cooking-pots with horizontal rim of type A5, may add weight to such a dating. If we compare this complex with a kiln dating from the mid-second century in the same area, we are struck at once by the great disparity in shapes. There the jugs and amphorae are modelled in a very different way; the cooking-pot with heart-shaped lid-ridge has appeared on the scene, as has the rough-walled bowl with rim thickened towards the inside, although very different from our bowl type A4. Also the mortar has a different profile. The cooking-pot with flattened rim has hardly altered, but the rim-profile of the successor to our type A3 has undergone a change: it has less definition.\(^{49}\) Slowly but surely the overall picture of the Heerlen pottery industry - so often mentioned, yet not noticeably lacking in detail - is becoming clear. It is obvious that investigation of other complexes would yield a considerable amount of information. In this respect the St Joseph's Hospital complex in particular appears to provide an opportunity of compiling a type-sequence running from the end of the first century to the end of the second, or perhaps into the third century.

\(^{47}\) Martin 1915, \(^{48}\) below right.
\(^{48}\) Goossens/Evelein 1909, a/b. xxxiiic and f.
\(^{49}\) Gielen 1971a.
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