A Roman kiln at Halder, gemeente St. Michielsgestel N.B.

W. J. H. Willems

Abstract The article deals with the Roman potter's kiln at Halder, which probably dates to between 65 and 80 AD. The kiln produced predominantly Belgic wares, but also some other wares, possibly including mortaria bearing the stamp ADIVTOr. There are a number of similarities with a pottery at Amay (Belgium) and there is a possibility that both were subsidiaries of the same concern.

In May 1973, building activities in the village Halder near St. Michielsgestel (fig. 1) turned up a large quantity of sherds. The ROB was alerted by brother Celestius Vencken, a local amateur archaeologist and curator of the Oudheidkundig Museum at St. Michielsgestel. In view of the importance of the site, which turned out to be a Roman pottery kiln, a rescue operation was conducted on 21st and 22nd May, under the direction of J. H. F. Bloemers and A. Bruijn. Preliminary work and follow-up was carried out by local amateur archaeologists.

Fig. 1. Halder: situation of find spots. Drawing IPP.
The kiln

During the ROB excavation it became clear that the kiln was of a type common in the Roman period, the so-called up-draught kiln (see figs 2–3). The walls of the last phase of the kiln, which had been rebuilt once (see section, figs 2 and 4), still stood to a height of c. 0.45 m. After the final collapse, the resultant depression was utilized as a rubbish pit. This is reflected in the finds which consist only in part of kiln refuse. The upper part of the kiln must, by that time, already have been completely destroyed, so that although a meter of topsoil had been removed prior to the excavation, it is unlikely that much damage was done to the site.

The kiln consisted of the following components:
1. The stokehole pit where the fire was stoked and tended; width 1 m, length, excluding furnace, 2.60 m. The floor of the pit was covered by a thick layer containing large quantities of charcoal raked from the furnace.
2. The flue or fire tunnel was lined with clay heavily burnt during firing. It was funnel shaped, 0.5 m wide at the beginning and 35 cm at the furnace end, which is rather on the small side (cf. Corder, 1957, p. 13). It was c. 45 cm long. The flue roof was not preserved.
3. The furnace was a roughly circular pit with a diameter of c. 1.20 m and a wall thickness of c. 7 cm. Around the interior was a series of bulges (pilasters) with an average thickness of 25 cm, which probably served as floor supports (see below), but which also increased the turbulence of the gases (Corder, 1957, p. 14). A pedestal 20 cm wide and 1 m long projected from the rear wall. This is the most usual type of support for the heavy oven floor above.
4. The oven floor. Most Roman kilns had either a permanent, thick clay floor with round perforations, or a temporary floor constructed of clay fire-bars or loose perforated tiles laid next to one another. No traces of the floor were found during the excavation, so it was probably a temporary one, which is in any case more convenient for cleaning the furnace out than the permanent type. Such floors appear to be especially common in the pre-Flavian period (Woods, 1974, p. 274). In this case the floor may have been composed of six elements, considering the number of pilasters in the furnace wall which supported the fire-bars or tiles. A similar construction is to be seen, for example, in the kilns at Horningsea, Cambridge (Corder, 1957, p. 21, fig. 12).
5. The oven was partially below the ground level, partially above it. The superstructure was domed, and both archaeological evidence and several experiments indicate that the dome was rebuilt for each load (Bryant, 1973). A few fragments which may possibly have formed part of the superstructure were found at Halder (see p. 122, no. 13).

Although unforeseen, the discovery of the kiln was not altogether unexpected, since, over the years, a large amount of archaeological material has been turned up in Halder, some of it leading to rescue excavations. These point to the presence of a Roman settlement between c. 50 and 270 AD (Bogaers, 1974, p. 108). However, between 1962 and 1966 large amounts of topsoil were removed from the area and many traces of the Roman occupation will have disappeared for good. What has been recovered up to now points to a not inconsiderable industrial activity in the area. Thus the presence of innumerable pieces of iron slag (also in the kiln-refuse pit) is evidence of iron working (see Knippenberg, 1965a). In 1963 and 1964 four first and second century wells were excavated in an area near the kiln. Furthermore, a large rectangular pit, lined with posts and filled with clay was discovered about 100 m from the kiln (Bogaers, 1965, p. 54). This pit, dating to the second half of the first century undoubtedly contained a potter’s clay supply. A second clay store came to light a little more to the E, and dates from the second century (Bogaers, 1968, pp. 65–66). Our kiln, therefore, represents only a small part of a fairly extensive industrial complex which must have been functioning between the second half of the first and the end of the second century. As will become clear, the kiln represents one of the earliest activities on the site. Similar, non-military industrial centres (potteries and iron working together) appear in several places in Belgium.
Fig. 3. View of the kiln. Stoke hole in foreground with part of the flue behind, and the furnace with pedestal in background. Note pilasters against the furnace wall. Photo ROB.
A Roman kiln at Haider

Fig. 4. Stepped section along the junction of the flue with the furnace. The two periods are clearly differentiated. The photo also reveals slight differences in orientation between the two kilns. Photo: brother C. Vencken, St. Michielsgestel.

along the Roman highways, as for example at Howardries, Taintignies, Bliquy and Amay (see Amand et al., 1962; Amand, 1971). Considering the fire hazard involved in such activities their situation is hardly surprising.

2. Description of the finds

A total of 4072 objects were collected during the excavation of the kiln, comprising 37 complete or almost complete vessels, 3843 pottery sherds and 192 other items. The material is stored in the Oudheidkundig Museum at St. Michielsgestel where it bears the inventory numbers HM.O 1 to 18. The location of the various objects is as follows:

1. period I, fabric and remains of infill of first kiln: HM.O 9, 10, 14
2. period II, fabric of second kiln: HM.O 11, 12, 15
3. period III, fill of second kiln (rubbish pit): HM.O 1, 2, 2–3, 3, 4, 5, 6, 7, 8, 13, 18
4. topsoil, stray finds etc.: HM.O 16, 17.

The pottery from the rubbish pit cannot be regarded as a product of the kiln itself. There is no evidence to suggest that the finds represent the final load of the kiln. The kiln probably became useless, and the potter removed those items of kiln furniture still in good condition (the fire-bars for example) and continued to use the pit as a tip for his refuse, which included wasters from other kilns in the vicinity.

In the descriptions of the pottery the primary references are, where applicable, to the typologies worked out by Holwerda (1941) and Stuart (1962) for the Nijmegen pottery as this is the nearest town centre. The material from Haider is also comparable to that from several other kilns or potters’ spoil heaps from the second half of the first century. They are: Nijmegen, Maasplein (Id-IIa; Daniëls, 1927), Nijmegen, Holdeurn (c. 70–105; Holwerda, 1944), Heerlen, St. Jozefziekenhuis (Id-IIa; Goossens & Eveline, 1909; Bloemers & Haalebos, 1973), Amay, Home des Vieillards (end of Ic; Amand et al., 1962), Howardries, Bois de Flines (middle of first century; Amand, 1971), Vervoz, Chemin de Bois (middle of first century; Willems et al., 1967), Neuss, kiln 1–7 (ib; Filtzinger, 1972), Köln, Kaeserstattstrasse (f; Fremersdorf, 1950, pp. 58–68), Köln, Lungenstrasse (9–50; La Baume, 1958).

2.1. Products of the Haider pottery

1. Terra nigra bowl with everted rim (fig. 5, 1–2). Period I, II, III and stray finds. Complete 9, rim fragments 147, height 9–25 cm (usually 9–12 cm), max. diam. 15–34 cm (usually 15–22 cm).

Open, wide bellied bowl, rather low recessed neck, sometimes defined by a groove on the shoulder, low footing. Fairly thick-walled, usually with black or dark grey, polished, surface. In addition, sherds of a rough-cast grey fabric also appear (cf. Holwerda, 1941, p. 48). About 75% of these bowls are decorated with two or three zones of closely set incisions. Holwerda (1941, p. 136) and many other writers call this decoration Radlchenverzieruiig (rouletting), although the nomenclature is inaccurate since this sort of decoration is not produced by a roulette-wheel at all, but by a rib being held against the leather-hard vessel whilst it rotates on the wheel. The tool chatters against the surface, leaving a row of small incisions behind. The remaining 25% is undecorated and usually has a gritty gray surface. In addition these bowls also have a rather more pronounced neck-shoulder angle and the neck is straighter, so it might be permissible to speak of some kind of subdivision (see fig. 5, 1–2). However, during the study of the pottery the differences often proved to be gradual, hence no typological division is made here. In view of the large number of sherds and completeable bowls, as well as the presence of numerous wasters, this type must have been made on the site. Sherds of varying colour frequently join (see fig. 6); the vessel must have shattered during firing, some fragments landing in an oxidizing, others in a re-
During atmosphere. That both red and black pottery should appear in the same kiln load is by no means surprising, since this phenomenon occurs with technically unsophisticated kiln types, such as the Roman up-draught kiln, where the potter has little control over the firing processes. That the chemical reactions during firing are reversible, so that black may turn to red and vice versa, was already pointed out by Ludowici (1908, pp. 291-294). Finally, a base fragment on which a graffito in the shape of an X was incised prior to firing, should also be mentioned (fig. 7,2).

Parallels. The form is to a certain extent paralleled by Holwerda’s type 55b/c, which, however, is undecorated and does not usually have a foot-ring. It is also comparable to Hofheim type 116 and Filtzinger, 1972, type 30-1/3. Similar bowls are known from the following kilns: Köln, Lungengasse, kiln VIII (La Baume, 1958, Abb. 28,1-2), Neuss, kilns 1-2, 5-7 (Filtzinger, 1972, Taf. 30,4,8), Nijmegen, Maasplein (Daniëls, 1927, p. 92), Vervox, kiln 5 (Willems et al., 1967, pl. C,17).

Dating. According to Holwerda (1941, p. 48) this type, though appearing in the first century, belongs primarily to the second century. Following up the references cited by Brunsting (1937, p. 123) there appears to be little chronological variation in shape. It is possible that the low rim of the bowls from Halder points to a first century date.

2. Terra nigra bowl with virtually cylindrical upper part (fig. 5,3). Period III. Complete eg 1, fragments 10, height to 11 cm, max. diam. to 14 cm.

Virtually cylindrical carinated bowl with everted rim, grooves sometimes delineate the carination, lower part of body sometimes with ‘chattered’ decoration. As type 1, always with a low foot-ring; fairly thick-walled, polished and frequently grey or grey-brown in colour. On account of the shape of the rim and the foot, the quality of the fabric and the presence of wasters, this type should be regarded as an infrequent local product, closely related to type 1.

Parallels. True parallels are not really to be found. The bowl in Holwerda, 1941, pl. XII,583 (type 55c) bears a strong resemblance to this type, though its body is more concave and the decoration is absent. Several variants of this type were also made at Vervox (Willems et al., 1967, pl. C,12-15). Also related would seem to be the bowl in Filtzinger, 1972, Taf. 31,2, though the rim is as our type 3.

Dating. On the evidence of the parallels a date in the second half of the first century would seem justified.

3. Beaker with sharply everted rim (fig. 8,1-2). Period I, II, III and stray finds. Complete eg 16, rim fragments 193, height 15-23 cm (usually 16-17.5 cm), max. diam. 16-22 cm (usually 16-17 cm).

Baggy beaker with sharply everted rim, fairly thick-walled, polished and - in contrast to many parallels - always with a flat base. About 50% could, without reservation, be described as terra nigra but a whole scala of colours occurs as well. These may in part be explained by the shattering of the pot during the firing (see comments for type 1). On the other hand it is quite possible that both black and grey as well as red or cream beakers were produced in the same kiln. In this connection it should be noted that Holwerda distinguished between ‘red beakers’ (his types 13 and 14) and ‘black’ ones (type 11a/b). Since there is no difference in either shape or decoration of these beakers (cf. Holwerda, 1941, pl. II,58, 61 with pl. X,486, 478) this distinction is superfluous, all the more so as the beakers fired in an oxydizing atmosphere only form a very small group. It is conceivable that these are just ‘accidents’, form-
Fig. 6. Virtually complete bowl (type 1) of thick terra nigra (find no. H.M.O 13). On the left a sprung sherd which landed in an oxydizing atmosphere. Photo IPP, 1:2.

Fig. 7. Graffiti. 1. terra sigillata bowl, Drag. 24/25. 2. Belgic bowl type 1, 3. rim of dolium type 11. Drawing IPP, 1:1.

Fig. 8. Belgic beakers. 1. type 3a, 2. type 3b. Drawing W.J.H. Willems, 1:3.
ed when too much oxygen entered the kiln during the firing, replacing the reducing by an oxidizing atmosphere and turning all or part of the load red (cf. Bryant, 1973, pp. 151-153). The decoration usually consists of two or three chattered zones. The incised zig-zag lines familiar from the zoned beakers (Gurtbecher) occur sporadically. Two variants may be distinguished on the basis of decoration: 3a. (fig. 8,1) the decorated zones are separated by incised lines (Holwerda’s type 31a), 3b. (fig. 8,2) the decorated zones, of which there are two, are separated by embossed ridges (Holwerda’s type 31b). Both variants appeared in roughly equal numbers.

Parallels. Similar beakers occur not only in Nijmegen, but also in Hofheim (type 123B) and Neuss (Filtzinger, 1972, type 6a). Beakers of this type were also produced in the following kilns: Heerlen, St. Jozefziekenhuis (Goossens & Evelein, 1909, fig. 32,c), Köln, Lungengasse, kiln V (La Baume, 1958, Abb. 31,5), Neuss, kiln 3–5, 7 (Filtzinger, 1972, Taf. 7,5), Köln, Caesarstrasse, kiln P1 (Fremersdorf, 1950, p. 67), Amay, Home des Vieillards (Amand et al., 1962, fig. 25), Vervoz, kilns 5 and 6 (Willems et al., 1967, pl. B,5–6).

Dating. These beakers already appear in the earliest cemeteries at Nijmegen (Brunsting, 1937, p. 118) and at Hofheim they occur chiefly in the first period. The dating of the kilns referred to above also points to early production. However, the type does continue into the beginning of the second century.

4. Bowl with inturned, thickened rim (fig. 9). Period II, III and stray finds. Complete egs 4, rim fragments 171, height 15.5–27 cm, max. diam. 21.5–28 cm.

Hole-mouthed bowl with thickened rim folded in from bucket-shaped body, base cut off flat, of thick coarse, grey terra nigra, sometimes, however, also rough-cast. True ‘cork-urns’ are hardly represented. In view of the numerous wasters, the type was probably produced locally (with the exception of the few true cork-urns with their heavy organic temper). Three variants may be distinguished in shape and fabric: 4a. (fig. 9,1) form as above with inturned, thickened rim which is sometimes grooved, resulting in a step-like section (fig. 9,3), this variety is by far the most common (cf. Holwerda, 1941, type 94); 4b. (fig. 9,2) a type with barrel-shaped body and a simple bead rim. The fabric is usually gritted, but ‘corky’ pottery in this form also occurs (cf. Holwerda, 1941, type 94a); 4c. (fig. 9,4) unique is a rim fragment where the inturned rim displays two grooves so that three step-like ridges are formed. Decoration in the form of triangles was applied below the rim and the body is further covered with so-called Besenstrich-muster. The fabric is orangy-red and gritted (cf. La Baume, 1958, Abb. 16,4 and especially Loeschcke, 1909, Abb. 48, 5a).

Parallels. The terra nigra cork-urn forms are especially common in Nijmegen. They are totally absent in Hofheim, whereas in Neuss only those in the ‘corky’ fabric appear. Comparable bowls were made in the following kilns: Nijmegen, Maasplein (Daniëls, 1927, p. 92), Nijmegen, Holdeurn (Holwerda, 1944, pl. III,251), Köln, Lungengasse, kilns III, IV, VI and XI (La Baume, 1958, Abb. 17), Amay, Home des Vieillards (Amand et al., 1962, fig. 22), Howardries, Bois de Fliers, kiln I (Amand, 1971, fig. 20,28).
Dating. Although imitations of cork-urns in various other techniques already appear in Haltern, the terra nigra variant would seem to be most at home in the second half of the first and the beginning of the second century (Holwerda, 1941, p. 77; Brunsting, 1937, p. 126).

5. Mortarium (fig. 10). Period III and stray finds. Rim fragments 22.

Mortaria with overhanging flange, relatively smooth surface and white to yellowish in colour. Three rims are stamped; twice with ADIVTOR and a fragment ... (i) (fig. 10,1-3). Despite the absence of any certain wasters it is very well possible that the mortaria were produced in Halder. The rather large number of fragments and some colour differences in pieces joining together would seem to justify such a conclusion. A third fragment of an ADIVTOR stamp (fig. 10,4) comes from a nearby plot and a fourth, identical, example (fig. 10,5) is known from Opheusden (Hulst, 1972, p. LIII). Two other ADIVTOR stamps come from Meerssen (Habets, 1871, p. 413, pl. XI, 31, 31bis). With the exception of two from England, the majority of ADIVTOR stamps come from Belgium and N France. For a summary see Amand et al., 1962, pp. 19-20, note 1. This article deals with the pottery at Amay (fig. 14), where Adiutor possibly set up his workshop together with a colleague (Surnus).

 Dating. The mortaria are of Stuart's type 149 and in any case date to between 40-c. 120 AD. The kilns at Amay are dated to the third quarter of the first century.


As with the mortaria, local production of small dolia is quite possible, but not entirely certain. In addition to the small, smooth surfaced dolia, rim fragments of large dolia also occur. There being no reason to assume local production for this type as well, it is discussed in section 2.2.

7. Cooking pot with everted rim (fig. 11,1). Period I, II, III and stray finds. Complete cgs 6, rim fragments 108, height 16.5-123 cm, max. diam. 18-24 cm.

Cooking pot with everted rim and slack neck-body junction, along with two or three grooves; flat base, fabric gritty and dark grey. Base and wall sherds are difficult to distinguish from those of type 4 and also often from the Belgic types 1 and 3. Both variants distinguished in all the available reports - one with an everted bead rim, the other with a flattened rim (Stuart, 1962, type 201A, B) - are present, the former being the most common.

 Dating. The type appears virtually unchanged during the first and the second centuries (Brunsting, 1937, p. 141).

8. Ribbed beaker (fig. 11,2). Stray find. Base fragments 1.

Base of a beaker of rather thin-walled hard ware, the clay and/or the temper containing glittering particles; the ware thus differs from the so-called mica dusted ware, which is usually made of light brown, soft fabric, the outside being dusted with mica (‘gold-glitter’ cf. Stuart, 1962, p. 86). Neither is there any parallel for the decoration amongst mica-dusted ware. The beaker is decorated with ten vertical, applied ribs, with, on either side of each rib, a polished strip. The area between each rib is filled with diagonal polished lines standing out against the otherwise rough background. This technique of decoration by means of polished lines is well known from the Belgic wares. Although the lines are not always set in opposing directions, there is a general impression of herring-bone decoration. The remaining fragment is partially red-brown, partially black in colour, and is perhaps a waster, manufactured in the vicinity of our kiln. Nothing remains of the upper part
Fig. 11. 1. Cooking pot, type 7. 2. ribbed beaker, type 8, 3. native bowl, type 9. Drawing W.J.H. Willems, 1:3.

of the beaker, but the well-finished base is suggestive of a bulbous form. In view of the shape and decoration there might be a relationship with the early first century ribbed beakers which often have a mica dusted rim. The decoration of vertical ribs is rather more common, appearing for example on the round-bellied pot Hofheim 122, which only occurs on the earliest period at that site, and on the Augustan Rippenbecher (ribbed beaker), which, however, are thinner walled and the ribs are decorated with horizontal impressions (Albrecht, 1942, Taf. 28, type 31).

Dating. Although, in the absence of true parallels, the dating of this piece is uncertain, it does make an early impression, especially because of the decorative elements. Decoration of applied ribs and (applied) herring-bones appears on the same beaker shape in Augustan times (Vegas, 1975, pp. 5-6).

9. Native bowl (fig. 11,3). Period III. Complete eds 1.

Hand-made native bowl, round-bellied, sharp body-neck junction, neck concave, everted rim. Colour varies between grey-brown to black. On lower body Besenstrich (fettling). In view of the colour differences and the cracks in the fabric, the bowl may have been fired in a neighbouring kiln.

2.2. Finds directly related to the kiln

Finds standing in direct relation to the excavated kiln will be discussed here. Relevant are not only the finds from the structure of the kiln, but also those objects associated with the potting industry. The pottery types treated above will not be discussed separately again. Types nos 1, 3 and 7 occur in the body of the first kiln, and nos 1, 3, 4 and 7 in that of the second. Only relatively small quantities of each type are present.

10. Terra sigillata beaker, Drag. 30 (fig. 12,1). Period I.

Body sherd, red-brown, mat gloss, rather yellowish core. Fragmentary egg-and-dart frieze, protruding dart ending in two concentric circles. Frieze possibly delineated by a zig-zag line at top. This type is especially widespread in the pre-Flavian period (Oswald & Price, 1920, p. 147). An exact parallel for the two concentric circles could not be found, but it is comparable to Ritterling, 1912, Taf. XXVII,4a, 4b and 5.

Dating. Late Tiberian-early Claudian.


The rim sherds of two examples were used in the construction of the first kiln wall. One rim is complete and bears an X-shaped graffito (fig. 7,3), which is perhaps a mark to indicate weight or content. Unusual is a body sherd decorated with four finger-impressed relief cordons c. 1 cm broad. Comparable pieces come from 's-Hertogenbosch and Ouuddorp (Bloemers, 1967), and similar fragments also occur elsewhere in Haider.


Of the c. 65 fragments, 60 had been used in the construction of the first kiln. These represent the remnants of at least two broken-up querns.

13. Fired clay. Period II and III.

A large number (± 70) of fragments of burnt clay from the kiln walls. A few flat pieces, sometimes with impressions of pottery, probably come from the temporary dome over the firing-chamber.

14. Slag. Period II and III.

In total 11 pieces of slag were found, including at least two pottery and three iron slags.
Fig. 12. Decorated terra sigillata. 1. beaker, Drag. 30. 2-4. bowl, Drag. 29. Photo IPP, 1:1.

15. Kiln furniture. Period II and III.

Amongst the finds are ten unusual pieces of fired clay. In section they are roughly triangular, smooth on two sides while the third displays finger-smears (fig. 13,1-2). The smooth sides frequently bear impressions of the bodies of various pots. They are probably the clay props used by the potter to separate the different stacks of pots from one another and from the kiln walls whilst loading the kiln. It is, therefore, no coincidence that imprints of the ‘chatter’ decoration on the girth of the type 3 beakers occur on several of them. This decoration is placed on the greatest width.

Parallels. Directly comparable pieces were not forthcoming, though Corder (1957, p. 26) does mention ‘distance pieces or pads’, which, however, have a quite different appearance. Hull (1963, pp. 25–26), in his discussion of clay luting, mentions pads of a similar shape to ours (see especially his fig. 14,17), but which were used in a completely different context in the construction of the terra sigillata kiln.

2.3. Other finds

16. Terra sigillata bowl, Drag. 29 (fig. 12,2–4). Period III. 
1. Body fragment, bright red, high gloss (fig. 12,2). On lower frieze, part of a garland of V-shaped paired leaves (cf. Mary, 1967, Taf. 3,6, Taf. 9,4; Knorr, 1952, Taf. 18G: CRESTIO; Hermet, 1934, pl. 54,2). Below this frieze a bundle of three leaves (cf. Knorr, 1919, Taf. 83,23: VITALIS; Hermet, 1934, pl. 14,72, with identical scheme of decoration). To the right, top of an incomplete, presumably lobed leaf.

Dating. Claudius-Nero.

2. Body sherd, bright red, mat gloss, yellow inclusions (fig. 12,3). Only the lower part of the beading remains of the upper frieze. The central frieze consists of upright lanceolate leaves (cf. Bushe-Fox, 1949, pl. 78,33: GERMANUS) defined at the top by a line of thick beading with finer beading at the bottom. The lower frieze consists of a hare and a hound leaping to the right, bounded by vertical zigzag lines. For the hound compare Knorr, 1919, Taf. 25,3: CRESTIO, and esp. Knorr, 1952, Taf. 66B: ‘vielleicht späte Arbeit des scottivs’. For the hare see Knorr, 1919, Taf. 82, 6. An almost identical scene appears on the fragment Knorr, 1952, Taf. 82B: VITALIS, from Nijmegen.


Dating. Vespasian (early Domitian).

17. Terra sigillata dish, Drag. 18. Period III. 

Seven examples, all S Gaulish products.

Dating. Claudius-Nero.

18. Terra sigillata dish, Drag. 18/31. Stray find.

Single example, E Gaulish product.

Dating. second century.

Single example, below the rouletting is a light groove (cf. Oswald & Price, 1920, p. 171, esp. pl. XL,4) typical of the S Gaulish products. Upper portion of a graffito remains on the side (fig. 7,1).

**Dating.** Claudius.

20. **Coin.** Period III.

Neronian as, 64–66 AD; obverse: IMP NERO CAESAR AUG P MAX TR P. . . ., reverse: Victoria facing to left holding a shield inscribed SPQR (cf. RIC 329–330).

21. **Coin.** Stray find.

As or dupondius, reverse with coutemarck. Most probably to be dated to the first half of the first century.

22. **Native pottery.** Stray finds.

Four body sherds and a rim sherd of thick-walled, organically-tempered handmade pottery with wavy rim. Such pottery has turned up in Halder before (Knippenberg, 1965a) as well as at other sites in the Netherlands (Boegaers, 1965, p. 54). The sherds may come from the large tubular vessels in which salt was dried and transported (Gouletquer, 1972). Another possibility is that they were used in iron smelting (Knippenberg, 1965a).

In addition to the above many less noteworthy objects appeared, mostly from period III. In the present context, the following types of pottery are of interest:

- Belgic ware: carinated cup (*parelum*) (Holwerda, 1941, type 82), flagon (id. type 25c), bowl (id. type 86a) and platter (id. type 77c);

- Varnished ware: beaker (Stuart, 1962, type 1B), beaker (id. type 2) and beaker (id. type 4);

- Smooth surfaced ware: squat amphora (Stuart, 1962, type 132A), amphora (id. type 138) and incense cup (id. type 145);

- Rough-cast ware: bowl (Stuart, 1962, type 210A, B, perhaps also type 202) and handled vessel (id. type 213A).

The remaining finds consist of a fragment of a glass...
3. Production and dating

Only a limited range of products may, with any degree of certainty, be assigned to the Halder kiln. They are the terra nigra bowls 1 and 2, the beakers 3, the cork-urn types 4 and the rough-cast cooking pots 7. In addition, the local production of mortaria 5 and small, smooth-walled dolia 6 is probable. Finally, the ribbed beaker 8 and the native bowl 9 may also have been made in Halder. Since the sherds cannot be regarded as forming the final kiln load, little value can be attached to statistical comparison of the types recovered, for the numbers in which the various types are represented are the result of a combination of several coincidental factors. There is, furthermore, no indication whether the relative proportions of types in the excavated complex are in any way an accurate reflection of the relative frequency of products from the pottery as a whole.

Rather more information is available concerning the dating of the kilns. Although the most suitable finds for this purpose come from the kiln-fill (rubbish pit, period III) and are thus later than the kiln itself, the fact that many of the same types were found not only in the fill but also in the structure of both the first and the second kiln (see below), clearly indicates that there is no question of a significant chronological gap. The structure of the small Roman up-draught kilns was not of a kind to remain long in use and it was comparatively simple to build a new one (Bryant, 1973, p. 156). An early date for the kiln is not, therefore, justified by the single fragment of Drag. 30 terra sigillata.

4. Dating evidence

Period I: type 1, 3 and 7; terra sigillata, Drag. 30 (Tiberian/Claudian).

Period II: type 1, 3, 4 and 7.

Period III: type 1, 2, 3, 4, 5, 6, 7 and 9; coin (Nero, 64–66); terra sigillata, Drag. 18, 24/25 and 29 (Claudius/Nero-early Flavian); Belgic ware, Holwerda, 1941, type 25e, 27c, 77c and 86a (IB or slightly earlier). The types of pottery produced date both kilns and the rubbish pit to the second half of the first century. Other finds allow the dating to be narrowed down somewhat. On account of the coins the rubbish pit was being used in 64 at least. The terra sigillata is either certainly pre-Flavian or, at its latest, early Flavian, while the Belgic ware might, in part, be a little later. Thus the most likely date for the rubbish pit is between 65 and 80 AD, the kilns being not very much earlier. Support for this dating is provided by the three kilns discovered in the garden of a Pensioners’ Home in Amay (Amand et al., 1962). Though the material found there is more varied than that from Halder, it still forms a good parallel. Mortaria with the stamp ADIVTOR(F) were, according to the excavators, also produced at Amay. Though the exact reasons are not given, the Amay kilns were dated to ‘la fin du troisième quart du premier siècle après J.C.’, which corresponds well with Halder.10

5. Conclusions

The similarity in the products of the kilns at Amay and Halder, the occurrence of mortaria stamped by Adiutor at both sites and their apparent contemporaneity suggest that the two workshops were closely related. This suspicion is further supported by the identical context of a civil industrial area and the probable topographic relationship between the two. Halder lies where the suggested Roman N-S road (cf. Van Es, 1972, p. 87) coming from Rossum, runs along (over?) the Dommel. The road continues, to cross the Maas at Amay, going by way of the statio at Veldhoven and via Tongeren. The close relationship between the sites may be variously explained. In the first place, the similarities may simply be fortuitous, just because both potteries functioned in an almost identical context. The mortaria with the stamp of Adiutor could then be regarded merely as imports – possibly from Amay – especially as their association with the rest of the material is not 100% certain. If, on the other hand, the mortaria are regarded as local products, which would seem to be the most obvious conclusion, then the similarities between Halder and Amay are even more puzzling. In this case, three models to explain the relationship may be put forward.

The first model is historical and assumes that the two centres were not contemporary. Halder is situated quite near to the Insula Batavorum, the centre of the Batavian rebellion of 69. The economic climate would obviously have worsened as a result of the hostilities. Adiutor may have closed shop in 69 or 70, having decided to move to somewhere more peaceful. Travelling southwards along the highway he eventually settled in Amay. This reconstruction implies that the same person (or people) were working at both Halder and Amay. It might be possible to test this theory by means of a comparative study of the fingerprints left on the pottery.11

The second possibility is also based on the assumption that the same person or persons worked at both sites. Adiutor could be regarded as an itinerant potter, working a while on various sites and then moving on. Thus he could also have worked at Bavai (N France, see fig. 14) where a concentration of Adiutor stamps has been reported (Terisse, 1960, p. 139, fig. 1, 1–3). Although there is no direct
epigraphical evidence for such itinerant potters in the Roman period, their existence is not impossible. This is suggested by, for example, Bryant's comment (1973, p. 156) that the kilns 'must have been very quickly built and formed not a very valuable piece of capital equipment'. It was, thus, the presence of clay and wood, of which only small quantities were required (cf. Mayes, 1961, p. 13), which influenced the potter, not any difficulties inherent in making his kiln. Most of the potters' equipment would have been quite simple to transport. Though it is more reasonable to suppose that a potter travelled considerable distances than that his products did, the itinerant potter is not so convincing. If Adiutor was indeed such a figure, we should expect to find identical name stamps in various locations. But, with the exception of the stamp of Opheusden, no stamps exactly duplicate those from Halder.  

More promising, then, would seem to be the third model, which turns to a phenomenon in the production of terra sigillata, that is, the establishment of subsidiary potteries in various locations. The production of terra sigillata was probably linked to the occurrence of certain types of clays, so the potter could not start anywhere he fancied. Although they established themselves as near to their markets as possible — from the end of the first century (cf. Oswald & Price, 1920, p. 12 ff.) — their products were still traded over considerable distances. Here, however, we are concerned with a luxury ware, which, in its very shape, answered the requisites of transport, as it was stackable (thus taking up less space and with less risk of breakage). It is significant that the forms which did not answer this requirement, such as jugs, inkwells etc. are rarely found in archaeological deposits. They were probably very expensive indeed. As far as the production of coarse pottery is concerned, the situation is rather different. This could be produced almost anywhere. The Roman up-draught kiln was only capable of reaching relatively low temperatures: c. 650–900°C (Bryant, 1973, p. 150), in part due to the thickness of the oven floor. No very special clays are necessary for firing at these temperatures, so there was a wide choice of locations open. Brujin (1962–1963) noted similar factors at work in the manufacture of certain types of pottery in the 14th century AD and later. The same is true for the Roman period, when the horizontal kilns were in their infancy. As has become apparent from excavations, most vicus, coloniae and military bases have their own potters' quarter, which also served the surrounding area. The practical reason for this scatter must be that it was not necessary, technologically speaking, to concentrate the industry in any special area with all the consequences of long-distance trade.

There are, however, still a number of factors which systematically distort this picture. In the first place, in the newly annexed areas much more pottery was imported in the early phases — the beginning of the first century for the Netherlands — as there was not yet a local industry tailored to meet the Roman demands. This was not a long-lived situation. A second factor was the mobility of the troops: units will undoubtedly have brought their own kitchen utensils with them when they were transferred. A third exception is created where pottery was used as a container, as in the case of amphorae used to transport wine and olive oil. Furthermore, it is apparent that certain types of relatively easily transportable coarse pottery could also, on occasion, be traded quite far. Evidence of this is supplied by the mortaria (Hartley, 1973) though the examples quoted by Hartley are primarily the result of the first two factors mentioned above. The two Adiutor stamps probably reached England in this way. Mortaria were, however, still traded over some distance even in later times, though much less far. In many cases 'exports' of coarse pottery may be more reasonably explained by the movement of people who took some of their possessions with them, than by the supposition of long-distance trade. Thus, in a recent article (Fulford & Bird, 1975) it is shown that coarse pottery made in the Rhineland and in the Eifel appears in England. On account of its distribution, it is unlikely that the army was the only factor responsible and the authors conclude (op. cit., p. 181) that some sort of trade relationship must have been at work. It is remarkable that the imports to Britain all occur in fourth century contexts, while most of the pottery types in question were already in production by the end of the second century. This fact, coupled with the relatively small numbers involved, suggests that the pottery may indeed have been brought by immigrants to Britain in the fourth century and that true trading relationships are not concerned. Rivet (1969, esp. pp. 208–209), using a number of concrete examples, shows that an
emigration of land owners from the troubled Continent took place just in the fourth century, when the conditions in Britain were more attractive economically. Despite these exceptions the general picture remains constant.

Throughout the Roman period, both civilian and military potteries with a limited marketing area are to be found near centres of population. This is essentially in agreement with the conclusions of Hodder (1974a, b), who discerns two different marketing models, the first of which, corresponding to ours, concerns relatively small-scale production with a limited service area around the market- or production-centre. His second model is based on relatively large-scale production of better quality wares. By means of a complex and indirect marketing mechanism the products are dispersed over a much greater area, which naturally results in a quite different distribution pattern of these wares. If the hypothesis of two subsidiaries of the same concern as proposed above is at all valid, it entails certain consequences for Hodder's theory, since, in the case of only one of the manufactories being recognized, model 2 may be applied on the evidence of the distribution pattern of the products, while in fact a multiplication of model 1 is called for.

The material presented in this paper does not provide incontrovertible evidence for our third model. The analysis of the clay used for the mortaria from Amay and Halder may possibly clarify the issue, as would the systematic investigation of the industrial complex at Halder. However, the prospects of further excavation have become exceedingly slight on account of the extensive removal of topsoil during the 1960's.

Notes

1. The author wishes to express his gratitude to brother Celestinus for making the material used in this article available and for providing working space in the Oudheidkundig Museum (in the Instituut voor Doven). He and brother Arno van Veldhoven are further to be thanked for undertaking the extensive preliminaries to working-out the finds.
2. The author is grateful to Drs J.H.F. Bloemers for his advice and his permission to publish the material and to Mr A. Bruijn for making his field drawings available.
3. See Knippenberg, 1965b, p. 74 for a photo of this clay pit.
4. The review presented below is by no means exhaustive. For a more complete survey, see Filtzinger, 1972, pp. 102-105, for Germania Inferior and Amand, 1971, pp. 5-7, for Belgica.
5. For a detailed description see Von Petrikovits in Filtzinger, 1972, esp. on p. 140.
6. See Van der Leeuw, 1976, for a more detailed study of the factors in the kiln which may, amongst other things affect the final colour of the pottery. The author is grateful for Dr Van der Leeuw's comments on an earlier version of this paper.
7. Ritterling, 1912, is followed here for the dating of Hofheim, although this is by no means certain (cf. Baatz, 1963, pp. 189-190).
8. Identification by the Koninklijk Kabinet van Munten, Penningen en Gesneden Steenen in the Hague.
9. In many cases Holwerda dates the Belgic ware wrongly because of his incorrect, much too precise, dating of the earliest cemeteries O, E and S at Nijmegen (see further the comments by Daniëls, 1955, p. 105ff.).
10. The Adivtor stamp from Opheusden in fact comes from a late second to early third century context, but the finds were made during clearance of an orchard and are not stratigraphically controlled.
11. Cursory examination of a very small fraction of the pottery from Halder produced several finger prints, so the material for such an investigation is certainly available.
12. Cf., for example, Amand et al., 1962, fig. 11; Terrisse, 1960, fig. 1,1-3 and CIL XIII/3, p. 77 for various die forms.
14. This is all the more likely since mortaria are typical of Roman kitchen-ware and functional substitutes do not occur in the native inventory.
15. This paper was originally written as a graduate thesis for the subsidiary subject Provincial Roman Archaeology of the Netherlands, at the IPP. The author is indebted to Professor W. Glasbergen, who assessed it, for his criticism and his valuable advice. Translated into English by C. van Driel-Murray.

References


CIL XIII/3 = Corpus Inscriptionum Latinarum, vol. XIII, fasc. 3.


