

THE PROBABILITY OF THE EXISTENCE OF GLASS-WORKING SITES FROM THE LATE IRON AGE IN LOWER AUSTRIA

A contribution to the question of the significance of the Late La Tène open settlements¹

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In the mid-third century B.C. the rate of economic growth accelerated considerably in the La Tène culture and reached its peak somewhat later at the time of the *oppida*. It seems that this developmental process was directly connected with dramatic historical events occurring in this area, mainly with the Celtic invasions into Macedonia, Thrace and Greece and with the Celts' ensuing waves of retreat. At the beginning of the Middle La Tène Period very rare objects and others not previously known to that culture gradually appeared and became quite widespread. Moreover, there is evidence that the local population started using and soon mastered new technologies.

Ornamental glass objects, unique in the La Tène culture, are undoubtedly examples of trends brought about by the historical changes mentioned above. The most common among La Tène artefacts were glass bracelets and later also large ring-beads.

Glass-making requires high temperatures, a technology mastered by humans quite early. Together with ceramic and metal objects, glass and its derivatives, like faience and glaze, are often found on archaeological sites dating from the Early Bronze Age. Unlike ceramic and metal objects, however, for a long time glass only served as a raw material for ornamental but not for practical objects, with the exception of tools made of obsidian, natural volcanic glass. Artificial glass was probably meant to imitate precious stones. This role of glass predominated a in "luxury" European cultures except the Mediterranean over a long period, until the early Roman times, when the blowpipe was invented, and even longer in some areas.

It is hard to describe precisely the role of glass-working and glass objects played in the La Tène society. N. VENCLOVÁ (1990, 157) suggests that glass workers might have been outlanders, later to be succeeded by local artisans. It still remains doubtful whether the art of glass-working was performed by individuals or by groups of specialists. It is almost certain, however, that these ornamental glass objects were of great value in the barter system.

During the Middle and Late La Tène Periods in north-eastern Austria the La Tène culture constituted a relatively uniform cultural system, strongly influencing the eastern part of the Waldviertel (mainly the valley of the river Kamp and the regions round Horn and Eggenburg), practically the whole area of the Weinviertel and, to the south of the Danube, the lower valley of the river Traisen and parts of the Wiener Becken and northern Burgenland (Fig. 1). This area was separated from the La Tène settlements in Upper Austria and Styria by an unsettled region stretching to the west and south-west. These areas of dense habitation in north-eastern Austria are adjacent to the La Tène settlements in Moravia, Slovakia and Hungary.

So far 560 Middle and Late La Tène glass bracelets and ring-beads have been found on 93 archaeological sites located in the area described (Fig. 2). The majority of these objects originate from settlements. The richest collections come from Etzersdorf (191 items; Fig. 3), Roseldorf (82 items) and Oberleis (78 items), followed by Haselbach (36 items), Drösing (18 items), Limberg (16 items), Großsirnig (13 items) and Seebarn (10 items). On other sites only a few or even solitary items have been found. All kinds of glass

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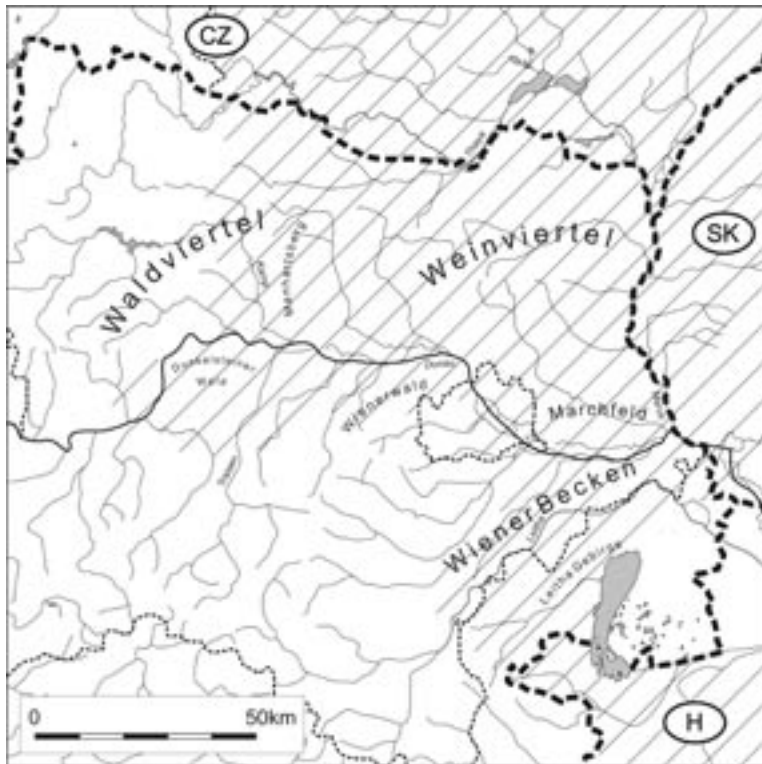


Fig. 1: The La Tène culture in north-eastern Austria.

bracelets and ring-beads typical of the La Tène culture, as well as rarer examples are known from this area. Chronologically, the material in question dates back over the whole Middle and Late La Tène Periods.

In the Late Iron Age glass objects were popular in Central Europe and, in the case of the La Tène culture, being found in practically every important settlement. Like in north-eastern Austria, a few items have been found on every archaeological site. They were often the most numerous non-ceramic group of objects found. On some sites the number of glass bracelets and ring-beads exceeded even a hundred items (Fig. 4). Despite such impressive numbers, the question of where glassworks were located and also if glass had actually been produced in the areas under the influence of the La Tène culture has remained unanswered. The remains of buildings, ovens, furnaces, tools, raw materials or production waste have never been discovered together on one single, specific archaeological site. The majority of researchers tend to assume that glass that had found its way into the La Tène areas might have been imported from Mediterranean glassworks as an intermediate product in the form of glass lumps or bars. Such glass lumps have rarely been found on La Tène archaeological sites (VENČLOVÁ 1990, 145 with references).

There is also some evidence that glass could have been

chemically modified, i.e. hued, decoloured or opacified in local workshops. Such activities require expert knowledge and experience, access to appropriate raw materials and, above all, good understanding of the complex processes occurring in molten glass. The results of chemical analyses conducted on glass ornaments of the La Tène culture and also the chronological values of some of the colours of glass of these objects might support these conclusions (FRÁNA et al. 1987, 75–88; HENDERSON 1989, 44–47; GEBHARD 1989, 148–167; BRAZIEWICZ et al. 1996, 47–59). What is fairly certain, however, is that glass was processed into ready-made objects in local workshops. The characteristic La Tène style of the ornamental objects found and also their distinct concentration on a number of sites account for the above-mentioned thesis. According to some researchers, glass workshops were located in the most important *oppida*, such as Manching in Bavaria and Stradonice in Bohemia. It is also assumed that glass-working was practiced in a number of open centres such as Dürrnberg in Salzburg,

too. These sites are comparable to *oppida* in many respects (Fig. 5; VENČLOVÁ 1990, 143–158 with references, Map 9).

The organization of glass production and its processing and then the distribution of ready-made products in ancient times must have been a complex, multi-stage process. M. DEKÓWNA (1988, 6) claims that in ancient times and in the Early Middle Ages there existed glassworks with varied profiles and organizations of production. Depending on demand, technical capacities and the type of material, production could have been organized in different ways. According to M. Dekówna there were two basic kinds of glassworks: these where the overall technological process was carried out – from the raw material to the final product – and those where only glass was produced and then sold in the form of semi-finished products or glass lumps or bars. The process then ended in workshops where objects were made of glass obtained from the glassworks (Fig. 6).

Whereas an archaeological interpretation of better preserved glassworks can easily be achieved in most cases, there are more problems concerning the classification of the remains of processing workshops and especially the objects produced in the last stages of the process. Often it is simply impossible to identify properly the type of workshop or the types of activities performed there (DEKÓWNA 1988, 6).

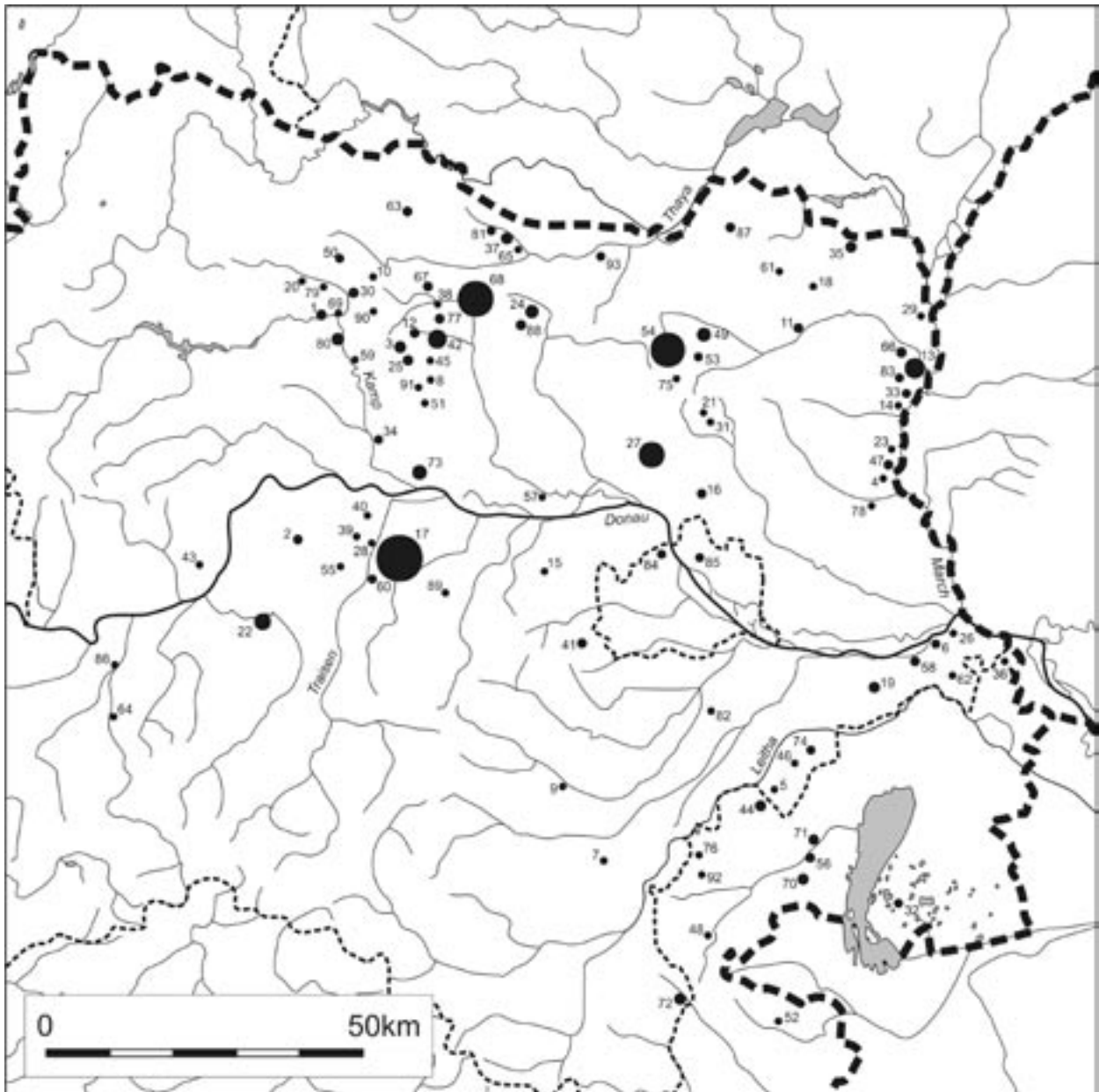


Fig. 2: Distribution of glass bracelets and ring-beads in north-eastern Austria. 1. Altenburg, 2. Ambach, 3. Amelsdorf, 4. Angern, 5. Au am Leithagebirge, 6. Bad Deutsch-Altenburg, 7. Bad Fischau, 8. Baierdorf, 9. Berndorf IV Bez., 10. Breitenreich, 11. Bullendorf, 12. Burgschleinitz, 13. Drösing, 14. Dürnkrut, 15. Elsbach, 16. Enzersfeld, 17. Etzersdorf, 18. Ginzersdorf, 19. Göttlesbrunn, 20. Großburgstall, 21. Großrußbach, 22. Großsiering, 23. Grub an der March, 24. Grund, 25. Gumping, 26. Hainburg an der Donau, 27. Haselbach, 28. Herzogenburg, 29. Hohenau, 30. Horn, 31. Hornsburg, 32. Illnitz, 33. Jedenspeigen, 34. Kammern, 35. Katzelsdorf, 36. Kittsee, 37. Kleinhöflein, 38. Kleinreiprechtsdorf, 39. Kleinrust, 40. Kuffern, 41. Laab im Wälde, 42. Limberg, 43. Loitzendorf, 44. Loretto, 45. Maissau, 46. Mannersdorf am Leithagebirge, 47. Mannersdorf an der March, 48. Marz, 49. Michelstetten, 50. Mödring, 51. Mühlbach am Manhartsberg, 52. Neckenmarkt, 53. Niederleis, 54. Oberleis, 55. Obermarnau, 56. Oslip, 57. Perzendorf, 58. Petronell, 59. Plank am Kamp, 60. Pottenbrunn, 61. Poysdorf, 62. Prellenkirchen, 63. Prutzendorf, 64. Purgstall, 65. Ragelsdorf, 66. Ringelsdorf, 67. Roggendorf, 68. Roseldorf, 69. Rosenberg, 70. Sankt Margarethen, 71. Schützen am Gebirge, 72. Schwarzenbach, 73. Seebarn, 74. Sommerein, 75. Steinbach, 76. Steinbrunn, 77. Straning, 78. Stripfing, 79. Strögen, 80. Thunau am Kamp, 81. Unterretzbach, 82. Velm, 83. Waltersdorf an der March, 84. Wien-Kahlenbergerdorf, 85. Wien-Leopoldau, 86. Wieselburg, 87. Wildendürnbach, 88. Windpassing, 89. Wolfersdorf, 90. Zaingrub, 91. Zemling, 92. Zillingtal, 93. Zwingendorf.

As mentioned before, numerous finds of glass bracelets and rings-beads (more than a hundred items on the same site) are very rare and usually occur at the sites of *oppida*. Thus the sites uncovered in Lower Austria, namely the settlement of Etzersdorf and also the settlements of Roseldorf and Oberleis, seem to be of particular importance. The sites in Etzersdorf and Roseldorf are open lowland settlements (Fig. 7) and the site in Oberleis is a hilltop settlement – Oberleiserberg (Fig. 8). Unfortunately, most of the material was collected from the surface of these sites. Only on the Oberleiserberg systematic excavation work and research have been carried out (KARWOWSKI 1999, 209–210 with references).

Despite the lack of an adequate archaeological context, one might accept the theory that local glass workshops existed in this area. Such concentrations of Celtic glass objects on individual sites seem to support this claim. Also, the presence of glass forms unique to this area or found only extremely seldom in other areas might serve as a strong argument supporting this opinion.

Tiny rings of 15 to 25 mm inner diameter, known in archaeological literature as ‘Fingerringe’ (HAEVERNICK 1960, 76; GEBHARD 1989, 169–172; ZEPEZAUER 1993, 86–87) might serve as the best example of glass forms unique to this area. It is hard to say if those objects were worn on the finger or served as elements of necklaces. The outer side of these rings is mostly decorated with oblique or crosswise notches, less often smooth (without any pattern), and in very few cases they show three ribs: a wide middle rib and two narrow side ribs (Fig. 9). Thus, the ‘Fingerringe’ are simply reminiscent of bracelet miniatures of Groups 3a, 6a and 8a in Th. E. HAEVERNICK’s (1960, 45–56) typology. Such rings are usually made of translucent blue, or more rarely, colourless glass and in single cases of purple, green or yellow glass. Sometimes they are additionally decorated with opaque yellow glass.



Fig. 3: Glass finds of the La Tène culture from Etzersdorf, private collection (photo by O. Chrstos, Inst. f. Ur- und Frühgeschichte, Univ. Wien).

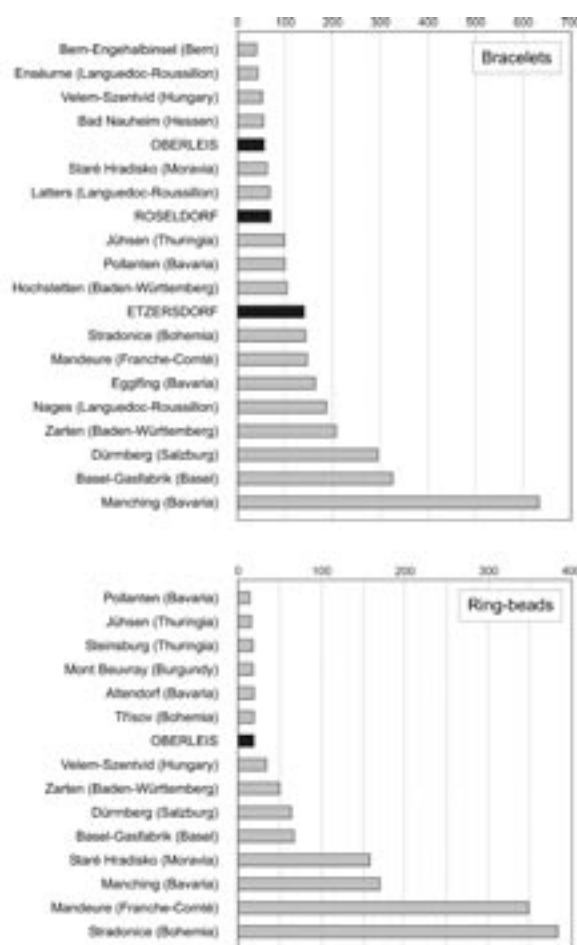


Fig. 4: The largest collections of glass bracelets and ring-beads in the La Tène culture. *Oppida* and open settlements (according to C. BRAND 1995; M. FEUGÈRE 1993; Th. FISCHER et al. 1984; R. GEBHARD 1989; M.-C. GUILLARD 1992; Th. E. HAEVERNICK 1960; M. KARWOWSKI 1999; U. LAPPE 1979; H. RISSANEN 1999; M. SEIDEL 1994; N. VENCLOVÁ 1990 and H. WAGNER 1993).

The 'Fingerringe' are clearly concentrated in the area of the La Tène culture in north-eastern Austria (Fig. 10). They are especially known from the settlements at Etzersdorf (46 items), Roseldorf (10 items), Oberleis and Haselbach (3 items in each), and Limberg, Loretto and Seebarn (1 item in each). Only a few items of this kind have been found outside that area: in Manching in Bavaria (9 items; GEBHARD 1989, 236 f. 243 Pl. 45, 630–632; 49, 737–742; ZEPEZAUER 1993, 87; 208); Dürrenberg in Salzburg (7 items; MOOSLEITNER 1974, 59 Pl. 157, 1; ZEPEZAUER 1993, 87; 209; BRAND 1995, 243 Pl. 186, 8–12); Pollanten in Bavaria (2 items; FISCHER et al. 1984, 352 Fig. 32, 1. 2) and in Osterberg in Bavaria (HAEVERNICK 1960, 67; 227); Mihovo in Slovenia (HAEVERNICK 1960, 67; 228; WINDL 1975, 65 Pl. 28, 7); Maňa in Slovakia (BENADÍK 1959, Pl. 9, 2; DERS. 1983, 59 Pl. 50, 5) and Nowa Cerekwia in Upper Silesia (CZERSKA 1963, 297 Fig. 4h; KARWOWSKI 1997, 61), where only single items have been found. Among the unique forms of Lower Austria are rings made of blue glass with notches on the outer side of the ring (Etzersdorf – 36 items, Roseldorf – 8 items, Haselbach – 2 items and Limberg and Oberleis – 1 item in each) and items with three ribs (single objects found at Etzersdorf, Roseldorf and Seebarn). Some of the notched rings found in the settlement of Etzersdorf seem to have been exceptionally carelessly manufactured, which may indicate that they were faulty items or production discards.

It is worth mentioning here that glass bracelets of Th. E. Haevernick's Group 8a (without side ribs; Fig. 11), which the notched 'Fingerringe' undoubtedly resemble, belong to forms very rarely found in the overall La Tène culture (HAEVERNICK 1960, 158). They are known, however, from a number of sites in north-eastern Austria (4 items found at Roseldorf and single items found at Etzersdorf, Oberleis and Loretto).

Two more objects found in the area described, might be direct proof for the existence of glass workshops there: pieces of glass slag found within the settlement of Etzersdorf (Fig. 12) and a lump of blue glass, which might have been an intermediate product, found most probably somewhere on the site of Drösing (Fig. 13). It should be noted, however, that there is no proof that these finds are representative for the La Tène culture.

Proving that a glass workshop existed in Lower Austria in the Middle or Late La Tène Periods would definitely contribute to studies on the technological development of the Late Iron Age. It seems, however, that it would also contribute to social studies, as it would prove that the local communities possessed new knowledge and experience, and certainly were engaged in far-reaching trade, namely, in the import of intermediate products and the distribution of end products.

In addition the social status of glass-working activities and the artisans engaged in that trade would be worth studying. The fact that there existed a limited number of probably glass-working centres, and only on the most important sites, proves that glass-working was carried out by a relatively small group of specialists. Obviously, without extensive and systematic excavation work it is difficult to determine whether the findings indicate a single workshop located within a settlement or a local production and commercial centre. As already stated, any remains of glass workshops that did not produce glass itself but only processed intermediate products are incredibly difficult to trace.

A glass workshop in an open settlement, e.g. Etzersdorf points to a significant aspect of the local settlement structure rather than to the existence of an important centre of the La Tène culture. This aspect might mean the presence of both, technologically complex production and trans-regional contacts made by the people inhabiting open lowland settlements, which, in the absence of *oppida* in the immediate vicinity, could have also made these settlements into administrative centres. This statement might serve as a supporting argument to V. SALAČ's (1993, 87–96; DERS. 1996, 70–77) claim that the leading role of *oppida*, as compared with the role of open production and commercial settlements of the La Tène Period, might have been overestimated by many researchers.

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Fig. 5: Presumed glass workshops producing 'Celtic' glass. Sites and regions (according to N.VENCLOVÁ 1990).

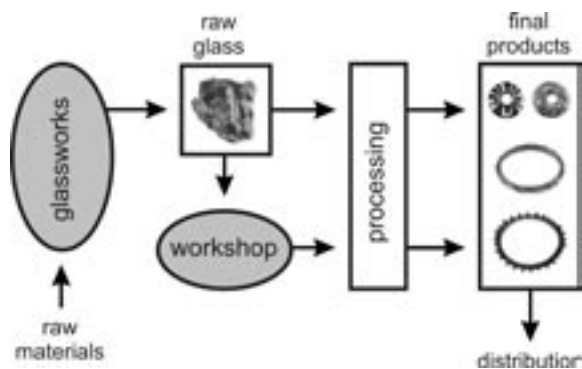


Fig. 6: Organization of glass production (according to M. DEKÓWNA 1988).



Fig. 7: Settlements at Etzersdorf – view from the north-east (left) – and Roseldorf – view from the south (right) – (photo by E. Wallner, authorized by BMLV Nr. 13088/060-1.4/01).



Fig. 8: Oberleiserberg, view from the west (photo by Inst. f. Ur- und Frühgeschichte, Univ. Wien, authorized by BMLV Nr. 13088/074-1.6/98).

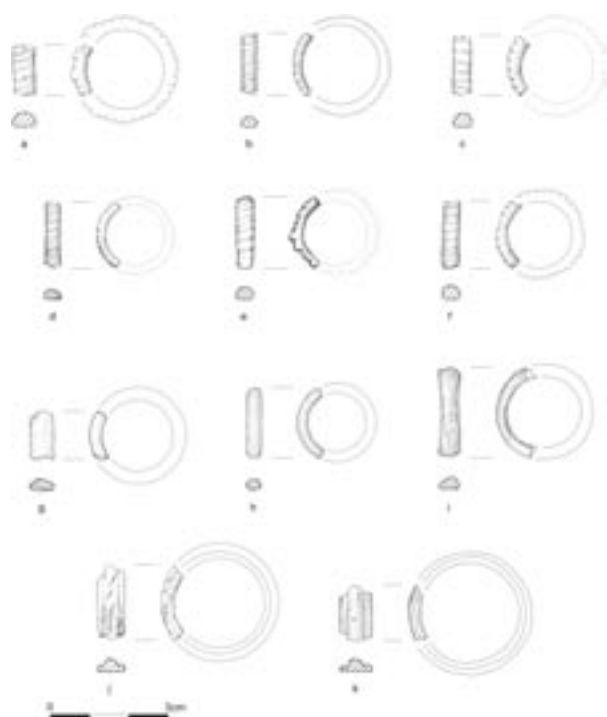


Fig. 9: Glass-‘Fingerringe’ from north-eastern Austria, a–g, j – Etzersdorf; h – Haselbach; i, k – Roseldorf (drawings by K. Szewczyk).

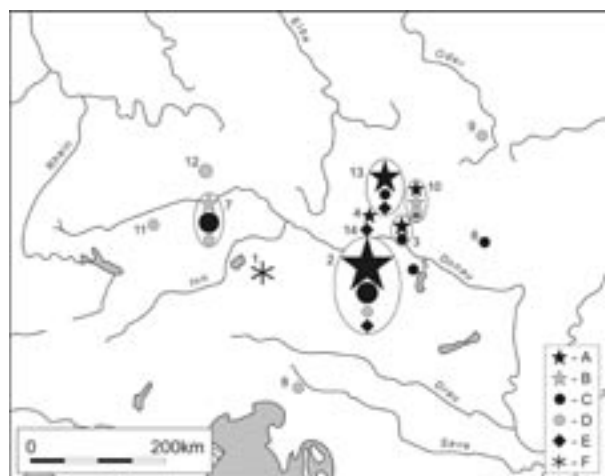


Fig. 10: Distribution of ‘Fingerringe’ in Central Europe. A – rings made of blue glass with notches; B – rings made of colourless glass with notches; C – smooth rings made of blue glass; D – smooth rings made of colourless glass; E – rings made of blue glass with parallel ribs; F – other rings.
 1. Dürrenberg, 2. Etzersdorf, 3. Haselbach, 4. Limberg, 5. Loretto, 6. Maña, 7. Manching, 8. Mihovo, 9. Nowa Cerekwia, 10. Oberleis, 11. Osterberg, 12. Pollanten, 13. Roseldorf, 14. Seebarn.



Fig. 11: Bracelets of Group 8a (without side ribs) from Roseldorf (drawings by T. Witczak).

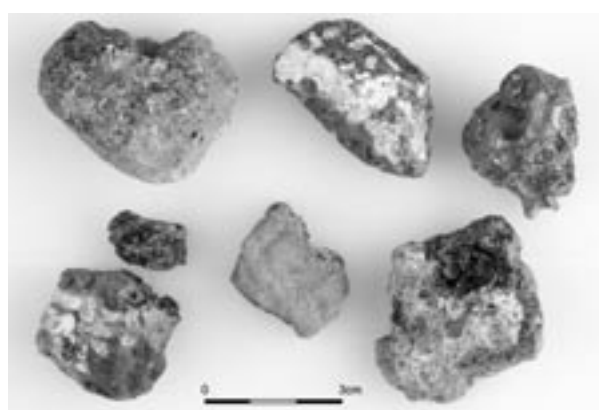


Fig. 12: Pieces of glass slag from Etzersdorf (photo by O. Chrstos, Inst. f. Ur- und Frühgeschichte, Univ. Wien).

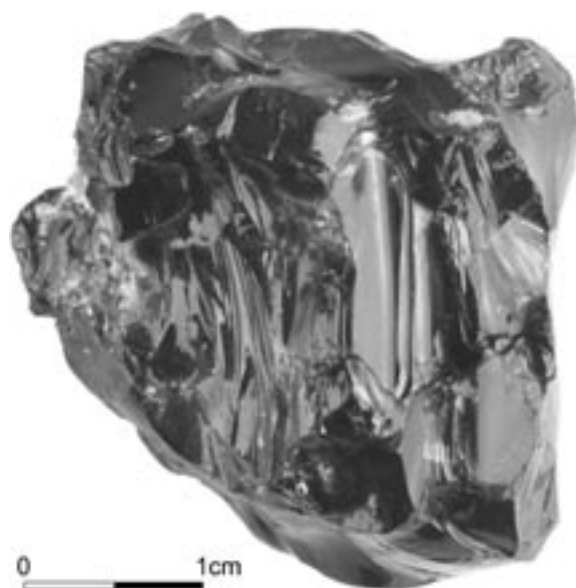


Fig. 13: Glass lump from Drösing (photo by N. Sautner, Inst. f. Ur- und Frühgeschichte, Univ. Wien).