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The Beringen Hoard (Limburg, Belgium). An assemblage of gold coins and ornaments from the 2nd century BC

Marilou Nordez, Guido Creemers, Barbara Armbruster, Maryse Blet-Lemarquand, Sylvia Nieto-Pelletier, Anaïs Cheuton

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AVREVS. Le Pouvoir de l'or /
The Power of Gold

Arnaud Suspène

est spécialiste d'histoire politique et monétaire du monde romain. Il est professeur d'histoire ancienne à l'Université d'Orléans à l'Institut de Recherche sur les Archéomatériaux (UMR 7065).

Maryse Blet-Lemarquand

est spécialiste de l'archéoméallurgie des métaux monnayés. Elle est ingénieure de recherche au CNRS à l'Institut de Recherche sur les Archéomatériaux (UMR 7065).

Frédérique Duyrat

est historienne du monde grec, de son économie et de sa monnaie. Elle est directeur du département des Monnaies, médailles et antiques de la BnF.

Sylvia Nieto-Pelletier

est spécialiste des pratiques économiques et monétaires du monde celtique. S. Nieto-Pelletier est directrice de recherche au CNRS à l'Institut de Recherche sur les Archéomatériaux (UMR 7065). Elle est directrice de l'IRAMAT et présidente de la Société française de numismatique.

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Monnaie d'or romaine de la deuxième guerre punique (RRC 88/1 ; BnF FG 77).

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BP 60149 - 59653 Villeneuve d'Ascq Cedex

Tél. +33 (0)3 20 41 66 95

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Auteurs

Michel AMANDRY	Société française de numismatique.
Jérémy ARTRU	IRAMAT-CEB, UMR 7065 Université d'Orléans-CNRS.
Barbara ARMBRUSTER	TRACES, UMR 5608 CNRS-Université Toulouse Jean Jaurès.
Mathilde AVISSEAU-BROUSTET	Bibliothèque nationale de France.
Sandrine BARON	TRACES, UMR 5608 CNRS-Université Toulouse Jean Jaurès.
Clara BERRENDONNER	Université Paris I-Panthéon-Sorbonne ; AnHiMA - UMR 8210.
Maryse BLET-LEMARQUAND	IRAMAT-CEB, UMR 7065 CNRS-Université d'Orléans.
Dorian BOCCIARELLI	Société française de numismatique.
François de CALLATAÏ	Bibliothèque royale de Belgique (KBR), Université Libre de Bruxelles, École Pratique des Hautes Études.
Anaïs CHEUTON	IRAMAT-CEB, UMR 7065 CNRS-Université d'Orléans.
Jean-Christophe COUVENHES	Lettres Sorbonne Université ; AnHiMA - UMR 8210.
Guido CREEMERS	Gallo-Romeins Museum Tongeren / Instituut Archeologisch Patrimonium.
Frédérique DUYPAT	Bibliothèque nationale de France.
Thomas FAUCHER	Centre d'Études Alexandrines (USR 3134 CNRS).
Wolfgang FISCHER-BOSSERT	Österreichische Akademie der Wissenschaften.
Julien FLAMENT	Chercheur associé IRAMAT-CEB, UMR 7065 CNRS-Université d'Orléans.
Benjamin GEHRES	Laboratoire Archéosciences - UMR 6566 CReAAH (Centre de Recherche en Archéologie, Archéosciences, Histoire).
Catherine GRANDJEAN	Université de Tours - CeTHiS (EA 6298).
George GREEN	Ashmolean Museum Oxford.
Pierre-Olivier HOCHARD	Université de Tours - CeTHiS (EA 6298) / Institut Universitaire de France.
Antony HOSTEIN	École Pratique des Hautes Études – Université PSL ; AnHiMA - UMR 8210.
Philip de JERSEY	Guernsey Museum.

Stéphane MARTIN	Chercheur associé, laboratoire HeRMA (UR 15071), Université de Poitiers.
Sylvia NIETO-PELLETIER	IRAMAT-CEB, UMR 7065 CNRS-Université d'Orléans.
Marilou NORDEZ	Post-doctorante, projet ANR-DFG Celtic Gold.
Julien OLIVIER	Bibliothèque nationale de France, chercheur associé IRAMAT-CEB, UMR 7065 CNRS-Université d'Orléans.
François PLOTON-NICOLLET	École nationale des chartes (PSL) ; EA 3624 Centre Jean- Mabillon / EA 4710 PoLeN.
Pierre PONTIER	EDITTA-UR 1491 / Sorbonne Université.
Arnaud SUSPÈNE	IRAMAT-CEB, UMR 7065 Université d'Orléans-CNRS.
Bernhard WOYTEK	Österreichische Akademie der Wissenschaften.

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The Beringen Hoard (Limburg, Belgium). An assemblage of gold coins and ornaments from the 2nd century BC

*Marilou Nordez, Guido Creemers, Barbara Armbruster, Maryse Blet-Lemarquand,
Sylvia Nieto-Pelletier, Anaïs Cheuton*

INTRODUCTION

This study was conducted within the framework of the French-German “CELTIC GOLD. Fine metal work in the Western La Tène culture” project (2017-2020), financed by the Agence nationale de la recherche (ANR) and the Deutsche Forschungsgemeinschaft (DFG), coordinated by B. Armbruster (CNRS – TRACES, Toulouse) and R. Schwab (CEZA, Mannheim). One of the aims of this interdisciplinary program, combining archaeological, technological and archaeometric approaches, is to renew the perception of the Western La Tène culture (middle of the 5th to the 1st century BC) through the study of production and consumption of gold objects. This concerns a wide geographic area, namely Belgium, France, Germany, Luxembourg, Netherlands, and Switzerland, and involves a large variety of economic, social, technological, and artistic aspects.

The Beringen hoard is perfectly in line with the Celtic Gold program and makes it possible to address many issues. First, it is a gold hoard whose archaeological context has been investigated, which is relatively rare for this type of discovery: mostly they come either from old discoveries or from illegal metal detector finds, in each case without documentation of the archaeological context. Then, the objects were also studied for themselves, both from a typological and technological point of view with the aim to better characterize them typochronologically and to identify the techniques used for their manufacture. It was also interesting to consider the composition of the gold: is it a native gold (from lode or alluvial deposit), a purified gold or an alloyed gold (intentional addition of copper and/or silver)? Is the chemical signature homogeneous within the hoard, indicating that the coins and fragments of objects might have come from the same gold stock? Finally, a last part concerns this association between annular ornaments and coins, which has been recurrent in hoards since the 2nd century BC in Western Europe. Although these issues are still ongoing as part of the Celtic Gold program, some hypothesis will be explored here.

ARCHAEOLOGICAL CONTEXT

In 1995, a young married couple discovered several gold pieces whilst digging the foundations of their house, in a small trench about 50 cm wide and deep (fig. 1). They took contact with the Gallo-Romeins Museum Tongeren (Limburg, Belgium): after negotiations, the hoard was acquired by the province of Limburg and then deposited at the Gallo-Romeins Museum Tongeren, where it is still stored today.



Fig. 1. Location of the Beringen hoard marked with a star. CAD M. Nordez. © photo G. Creemers, Gallo-Romeins Museum Tongeren / Instituut Archeologisch Patrimonium.

The site is located some 500 m north-west of a hill, in a region characterized by tertiary, so-called Diestiaan-hills. An archaeological survey was realized on a surface of 44 m² during the month following the discovery and the excavated material was inspected using a metal detector: no other metal objects were found.¹ Five short excavations were then carried out between 1996 and 1997 to investigate the surroundings, with few results concerning the hoard itself, due to recent or ongoing construction, and to the destruction of a significant part of the archaeological layer. Nevertheless, postholes of at least one building and its annex structure allowed to identify a part of a settlement, dated by pottery to La Tène A, and there were several slightly older silos, but no link can be established between these constructions and the hoard.² During the Roman period, a settlement with several native stable houses developed at the spot.

Although this information could not be verified during the excavation, and should therefore be considered with caution, the discoverer G. Gillissen pointed out some interesting information about the discovery, in particular the fact that the hoard was discovered in three separate lots (fig. 2). This information, completed with the excavation data, makes it possible to draw following conclusions:

1 van Impe *et al.* 1997; van Impe & Creemers 2001; Creemers 2010.
2 *Ibid.*

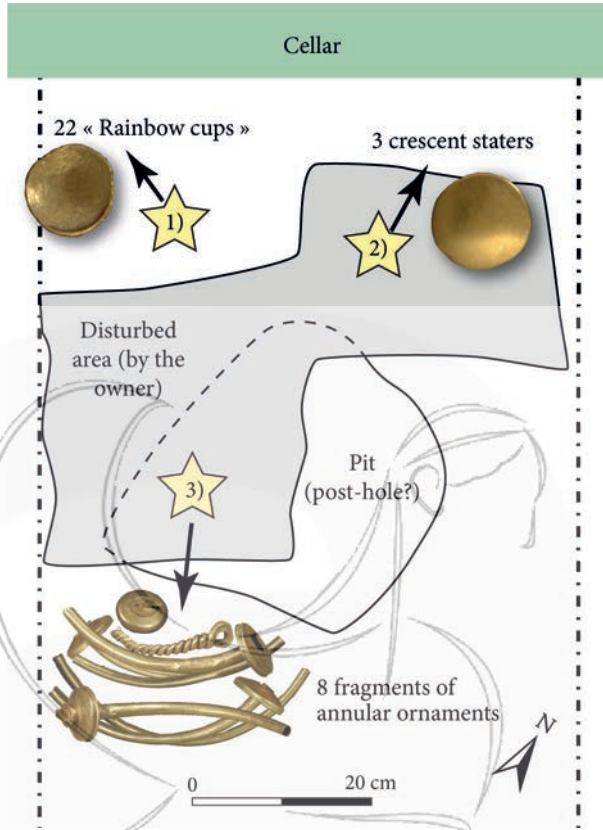


Fig. 2. Attempt to reconstruct the plan layout of the three potential sets composing the Beringen hoard, according to the inventor's information. After van Impe *et al.* 1997, fig. 4; CAD M. Nordez.

1) When digging a foundation trench about 10 to 15 cm deep from the edge of the cellar, he found a group of 22 gold coins (the 22 "Rainbow cups") surrounded by a rather dark substance which could have been the remains of a purse probably made of leather or textile. The foundation trench dug by G. Gillissen was still visible in the sand layer and documented as much as possible during the archaeologists' visit, as well as the recent pit made to collect the discovered coins.

2) At a slightly lower level, another group of three gold coins (the three crescent staters) was discovered in the trench.

3) A group composed only of ornaments was discovered at a location where the soil showed a variation in colour. During the verification, a pit about 30 cm wide and 22 cm deep was identified, interpreted by the archaeologists as a posthole. The jewellery was located in the southwest corner of this pit, but the stratigraphic relationship between the jewels and the post-hole could not be precisely established.

Although some caution should be exercised with this contextual information – we do know that older, as well as later postholes are present in the area –, a posthole in the direct vicinity of the hoard possibly recalls the find situation of the Niederzier hoard (Nordrhein-Westfalen, Germany), which was discovered in a settlement occupied between LT C2 and LT D2a: the context of this hoard is well known from excavations.³ For Niederzier, the posthole has been interpreted as a kind of “totem pole”⁴; while we think that we should remain cautious, in our opinion, it should be at least a “landscape marker”. Indeed, several cases of multiple hoards on a same site, each associated with a posthole, are known for older periods, as it is the case for the Middle Bronze Age hoards from Ribécourt-Dreslincourt⁵ (Oise, France): three contemporary hoards, a few metres apart from each other, may have been buried simultaneously or in the course of several days, months or years. This would potentially mean that these hoards were marked in the landscape, contradicting the interpretation of a “hideout” (“Versteckfund”) that has long been used to explain this practice. Unfortunately, the rather uncertain context of the Beringen hoard does not allow us to draw more conclusions.

MORPHOTYPICAL AND CHRONOLOGICAL CONSIDERATIONS

The gold hoard contained 25 coins, represented by three very worn crescent staters and 22 Rainbow cups, deposited with 8 fragments from at least four ornaments: a complete tubular torc in four fragments (now improperly joined due to the restoration); two terminal parts of another tubular torc, maybe from the same one (one with a tenon, the other one with a mortise); a terminal disc of another torc; and a looped terminal fragment from a twisted bracelet (fig. 3).

Twenty-two coins are Rainbow cups or *Regenbogenschüsselchen* (smooth type). Their diameters range from 18 to 20 mm, and they weigh from 7.60 to 7.80 g. They are bowl-shaped, with a hollow reverse side. These coins of Beringen are without a clearly visible decoration or image, and are therefore called “smooth” Rainbow cups. Only a small bulge occurs on some of them. The largest concentration of this type of coins is found in South Germany, between Rhine, Main and Voralpen but they are widespread.⁶ It is surprising that the nearby found Niederzier hoard, which is somewhat younger than the Beringen one, also contains *Regenbogenschüsselchen* from a more recent (Vindelici) type.

Three other highly worn coins are staters of Atrebatés assigned to Scheers 11 “au croissant” series (North of France, with a firm concentration around Arras),⁷ with 20 to 21 mm in diameter, weighing 6.10 to 6.93 g. The iconography has become almost unreadable. On the obverse, the head, looking to the right, has completely disappeared. The somewhat hollow

3 Göbel *et al.* 1991, 31; Joachim 2007.

4 Warmenbol 2018, 396.

5 Guérin *et al.*, 2022.

6 van Impe *et al.* 1997, 56-62.

7 Creemers & Scheers 2007.

reverse originally wore a horse, galloping to the left with a crescent moon above and also underneath it. All that's left is only a part of the cross of the upper crescent moon. Surprisingly, a lot of Scheers 11 gold coins are found east of its supposed region of origin. A second note can be made about the Niederzier coins: besides the Vindelici *Regenbogenschüsselchen*, the hoard contains, just like the one of Beringen, gold coins of western origin, namely Ambiani staters of the Lummen-Niederzier type.



Fig. 3. Photo of all coins and objects from the Beringen hoard. © B. Armbruster.

The coins date from the middle of the 2nd to the beginning of the 1st century BC.⁸

All torc fragments could be classified as tubular torcs with disc-shaped terminals and tenon/mortise clasps. These torcs' features are known from the 3rd century BC, for example at Fenouillet (Haute-Garonne, France). This goldworking tradition continues during the 2nd century BC, for which Beringen is an example, until the transition of the 1st century BC, as in the Niederzier hoard. Nevertheless, a clear reduction of the mass is visible between the torcs from Beringen and those of the 3rd century BC, which are mainly from south-western France (Fenouillet or Lasgraisses): the quantity of gold necessary for the manufacture of the former being much less important than for the latter. Indeed, the average mass of the so-called "efflorescence torques" of the 3rd century BC, such as those of southwestern France, weigh on average 192 g, while the estimated mass of those of Beringen is rather around 30 g (or six times less!).

8 Nick 2006, 24-27, 30.

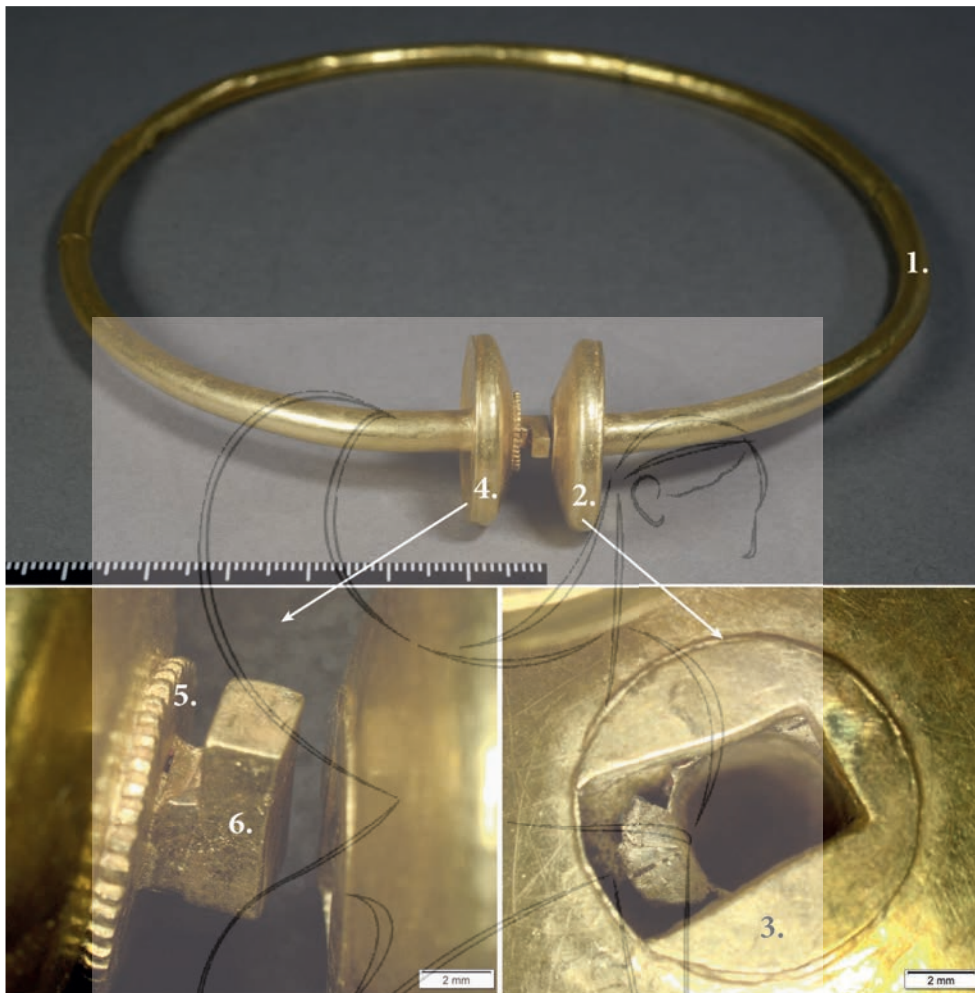


Fig. 4. Constitutional elements of the "complete" torc. © photo B. Armbruster, CAD M. Nordez.



Fig. 5. The two kinds of hollow terminal discs.
a) Sheet metal; b) Lost-wax casting.
© B. Armbruster.



Fig. 6. Tenon and mortise clasp system. The surface structure shows overheating for both parts of this clasp. © B. Armbruster.

TECHNOLOGICAL STUDY: THE COMBINATION OF DIFFERENT MANUFACTURING METHODS

The tubular torcs with disc-shaped terminals are complex objects, assembled from several individually manufactured elements. The “complete” specimen, that was deposited in four fragments (now re-assembled), is constituted of six elements (fig. 4), namely: tubular body (no. 1), first cast disc (no. 2), sheet roundel with mortise (no. 3), second cast disc (no. 4), the indented base of the tenon (no. 5) and the tenon (no. 6).

The manufacturing process implied a number of fine metal working techniques. The goldsmith used two different methods for making the five surviving hollow, disc-shaped terminals. One terminal type was made of sheet metal elements (fig. 5a), whereas the other one was realised by lost-wax casting (fig. 5b). One hollow sheet disc has a rough surface due to overheating (fig. 6).

The clasps are constituted of “L-shape” tenon and rectangular mortise on the disc-shaped terminals, which is typical for gold torcs of the 3rd et 2nd century BC (fig. 6). The concentric design of some of the disc terminals results from the use of a lathe for decoration (fig. 7).

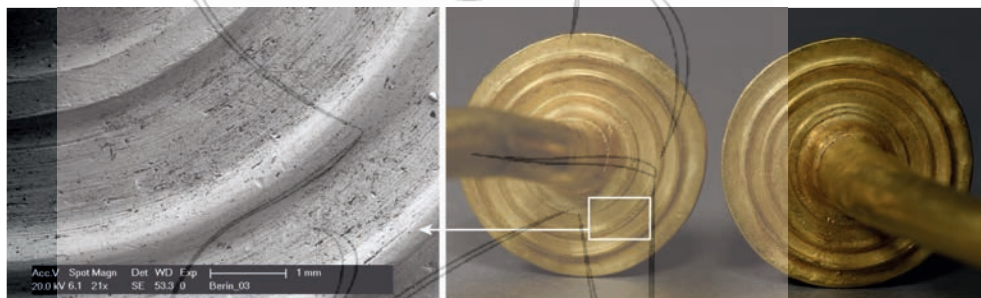


Fig. 7. Concentric circles on the back of terminal discs. © Photo B. Armbruster; SEM A. Cheuton.

The joining techniques consist of mechanical and metallic joints. The sheet tubes of the torc's body show a long soldering seam (fig. 8a). All discs have soldered parts (fig. 8b), and some discs were soldered to the tube's ending. Others indicate a mechanical fixing (fig. 4, no. 3). In this case, cut incisions are made in the rim of the tubular sheet body. The cut ending is introduced in a circular opening in the disc, and finally the indented rim is folded to fix both parts together.



Fig. 8. The two different joining techniques. a) Solder. On the right, soldering seam; on the left, the solder is broken. © B. Armbruster. b) The tenon of the clasp is soldered to the disc (dendritic structure). © Photo B. Armbruster; SEM A. Cheuton.

ARCHAEOMETRIC DATA

Ornaments and coins were analysed at the IRAMAT-CEB laboratory using LA-ICP-MS.⁹ Concentrations are tabulated in fig. 14.

Gold alloys

All the objects are made of gold-silver-copper alloys and most of them are in the following ranges: 73-66% gold, 23-27% silver and 4-7% copper (fig. 9). Some Rainbow cups are out of these ranges and have higher gold contents – up to 80% gold – and lower silver concentrations – between 16% and 20% (fig. 9).

The two torc fragments (nos. 2 and 3) and the terminal (no. 4) appear to be slightly richer in gold than the complete torc (no. 1) and the twisted bracelet (no. 5). Moreover, this grouping evidenced for the major elements is confirmed with the concentrations in the main trace elements (lead, bismuth, tin, platinum and palladium; fig. 10, on the left, and fig. 14). Besides the elemental composition, technical aspects lead us to link fragments nos. 2 and 3. Therefore it can be hypothesized that these fragments were parts of a same torc.

9 See Blet-Lemarquand in this volume and Blet-Lemarquand *et al.* 2018 for information on the analytical method.

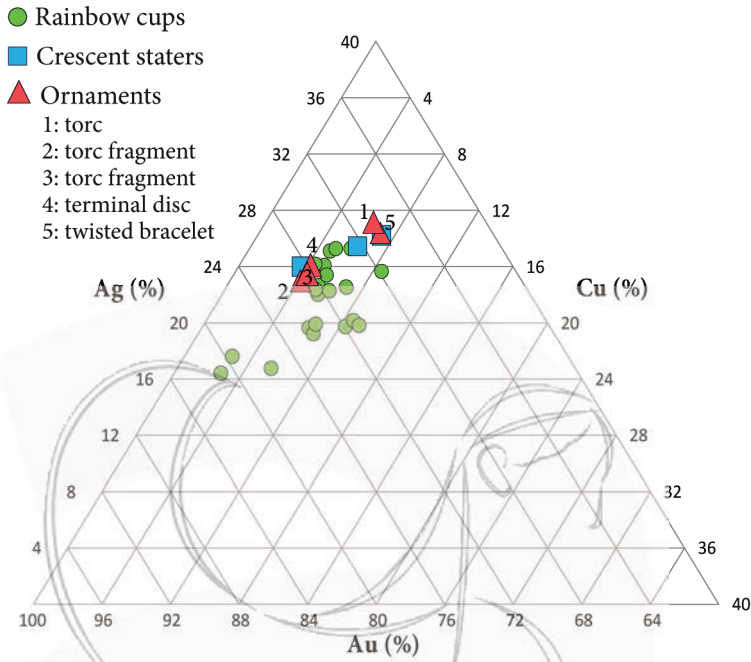


Fig. 9. Ternary diagram showing gold (Au), silver (Ag) and copper (Cu) contents of all the objects from the Beringen hoard. © M. Blet-Lemarquand.

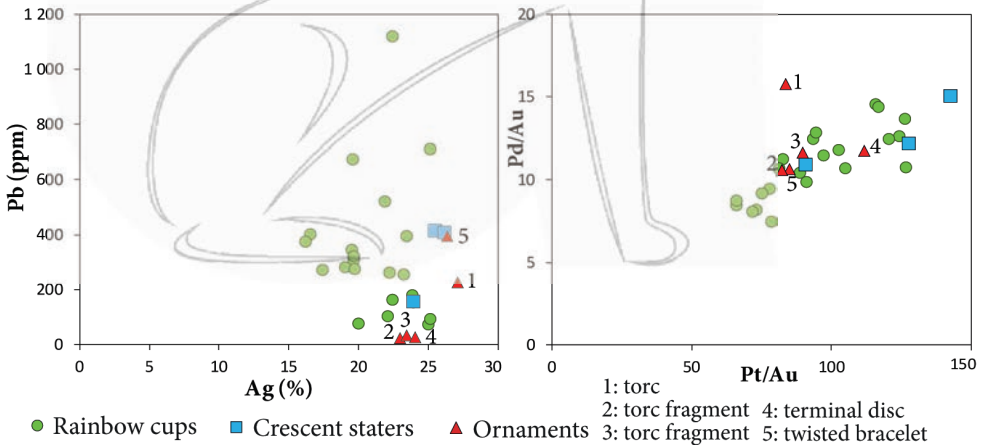


Fig. 10. Left: scatterplot of lead (Pb) against silver (Ag). Right: scatterplot of palladium (Pd) against platinum (Pt) scaled to gold (Au). © M. Blet-Lemarquand.

Gold provenance

The Pt and Pd contents scaled to the Au concentrations establish that the gold of all these objects has a similar chemical signature which suggests that all the objects may have been manufactured from the same stock of gold (fig. 10, on the right).¹⁰ In addition, Platinum Group Element (PGE) inclusions made of Os-Ir alloys were observed and analysed using SEM-EDX at the surface of five coins (fig. 11). This means that these coins were made with gold that comes partly or all of it from a placer that associates gold flakes to PGE inclusions.¹¹ This result can be generalized to all the artefacts of Beringen.

Soldering technique

A lump was analysed near a solder located on the rim of the terminal disc of no. 3 (fig. 12). It is enriched in copper¹² in comparison to the gold alloy no. 3 is made of, which lowers the melting point. This result confirms the use of the metallic solder for the ornaments.

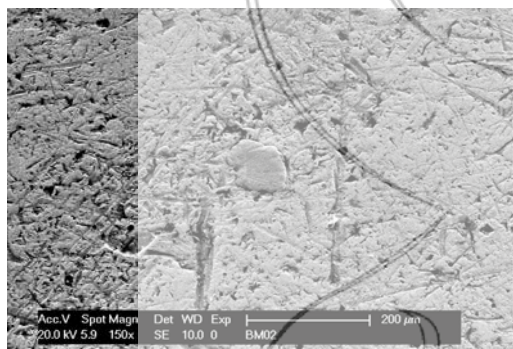


Fig. 11. Platinum Group Element (PGE) inclusion observed on a coin's surface. © SEM A. Cheuton.

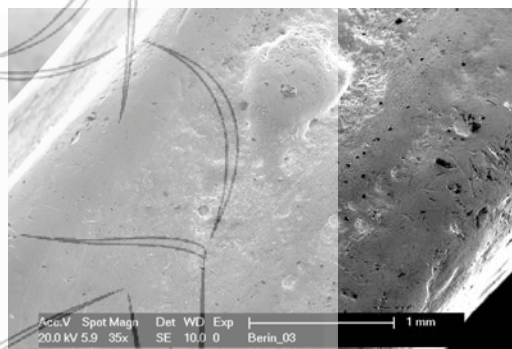


Fig. 12. Lump. © SEM A. Cheuton.

HOARDS WITH COINS AND ORNAMENTS

Most of the hoards of the 2nd century BC with annular gold ornaments also contained gold coins: out of the 41 Late Iron Age hoards recorded until now, 24 correspond to this configuration. This association is a typical phenomenon of the second part of the La Tène period, as found for instance in the French hoards from Tayac (Gironde), Saint-Louis (Haut-Rhin) or Sin-le-Noble (Nord; fig. 13). Although most of the currently recorded hoards containing gold coins appear to consist exclusively of coins, hoards combining annular

10 Blet-Lemarquand *et al.* 2017.

11 PGE inclusions have already been observed on some Regenbogenschüsselchen by C. Lehrberger and C. J. Raub (Lehrberger & Raub 1995) and by U. Steffgen for the Wallersdorf hoard (Bavaria, Steffgen *et al.* 1998).

12 Likewise in some trace elements that usually characterise copper (Ni, As, Sn, Sb, Pb, Bi; fig. 15).

ornaments and coins show a substantial link between these two categories of objects. While it is difficult to interpret these hoards precisely, the hypothesis that they materialise a reality of the elite economic system cannot be excluded.¹³



Fig. 13. Hoard from Sin-le-Noble in its burial context. © M. Lebrun.

During the 3rd century BC, a transformation of the function of the torc seems to occur: while torcs were commonly deposited in funeral contexts from the 6th to the 4th centuries BC, they are almost uniquely deposited in hoards from the 3rd century BC onwards. It seems that now religious, symbolic and economic considerations prevail over funeral dimensions.¹⁴

Indeed, while previously it was assumed that they were deposited in hiding places, Late Iron Age hoards are now considered in all their complexity, materialising socio-economic, symbolic and religious aspects and practices of Iron Age societies.¹⁵ The fact that some are marked in the landscape by a post, as is the case in Niederzier and perhaps in Beringen, contradicts the functionalist hypothesis of hiding places. They cannot be dissociated from a

¹³ Nordez *et al.* 2019.

¹⁴ Milcent *et al.* 2019; Armbruster *et al.* 2021.

¹⁵ Fitzpatrick 2005.

social or religious taboo forbidding the recovery of these objects for their exclusive economic use. Similarly, some of these hoards of which the archaeological context is known, were buried in connection with a sanctuary, corroborating the symbolic and religious dimension of at least a part of these ensembles. For this reason, hoards found in their archaeological context, excavated and studied as exhaustively as possible, are essential for a better understanding of the practices of hoarding.

CONCLUSIONS

A certain morphological and technological continuity can be seen with the torcs between the 3rd and the 2nd centuries BC, despite a clear decrease in diameters, correlated with a decrease in mass of the torcs. It is interesting to notice that this decrease is consistent with a general change in the chemical composition of the gold objects: whereas purified gold was used in the 3rd century BC (as well as the torcs from Lasgrais, Fenouillet, Civray-de-Touraine, etc.), the gold fineness decreased significantly during the 2nd century BC.¹⁶ The Beringen hoard is a clear illustration of this trend: the body of the deposited torcs is small in diameter, they are light and the gold which is used for their manufacture is an alloy of gold, silver and copper: an attempt was made to reduce the amount of gold used in the manufacture of these objects.

The following century (1st century BC) sometimes corresponds to an enlargement of the diameter of the body of the torcs (Saint-Louis, Mailly-le-Camp), but the quantity of gold used remains very low: the impression of massiveness of these objects is only visual, as their tubular body is generally filled with a material which has yet to be defined but which could be a wax-based mixture. However, the purity of the gold alloy increases again, between 93 and 96 % for the torcs from Saint-Louis or Mailly-le-Camp.

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Ref.	No.	Au%	Ag%	Cu%	Fe	Ni	Zn	As	Pd	Sn	Sb	(Ir)	Pt	Pb	Bi
Ornaments:															
1	6	66.4	27.1	6.3	868	44	20	12	10	672	16	1	55	227	46
2	4	72.9	23.0	4.1	<i>111</i>	<i>10</i>	<i>12</i>	<i>2</i>	<i>8</i>	<i>225</i>	<i>12</i>	<i>0.5</i>	<i>62</i>	<i>23</i>	<i>20</i>
2	1*	72.5	21.4	6.0	91	24	8	2	8	574	32	0.5	58	10	13
3	3	72.2	23.5	4.3	89	12	7	2	8	183	11	0.6	65	32	25
3	1**	69.9	19.7	10.3	45	45	12	10	5	1,463	100	0.5	47	65	61
4	3	71.7	24.1	4.2	179	9	19	3	8	96	5	0.9	80	28	15
5	2	66.5	26.3	7.1	317	28	36	16	7	504	25	0.9	55	395	82
Coins:															
1	2	68.2	25.5	6.2	173	54	25	10	7	519	16	1	62	415	97
2	2	72.2	23.9	3.7	1,432	72	30	15	11	377	11	2	103	156	33
3	2	66.5	26.2	7.2	190	73	28	30	8	446	15	2	85	408	76
4	2	72.2	22.0	5.6	229	55	15	19	8	466	144	0.9	70	520	60
5	2	71.8	22.5	5.5	261	15	13	8	8	301	28	0.7	60	1,115	84
6	2	73.6	19.7	6.6	232	75	23	11	11	170	141	2	86	307	41
7	2	73.9	19.6	6.4	439	41	22	10	11	242	89	2	87	342	61
8	2	70.1	25.0	4.9	97	4	8	2	7	40	16	0.6	57	69	30
9	3	70.4	22.5	7.1	229	28	29	4	9	134	17	2	88	160	51
10	2	77.6	16.6	5.6	584	78	11	22	6	278	40	0.7	57	399	70
11	2	73.9	19.1	6.8	388	33	30	10	9	250	30	2	89	279	65
12	2	71.7	19.7	8.4	330	93	18	16	6	660	474	1.0	52	672	115
13	2	69.6	25.2	5.2	48	4	9	2	7	38	18	0.6	54	88	40
14	2	70.7	23.9	5.1	328	25	21	10	7	2,772	13	1	63	178	60
15	2	80.7	16.3	2.9	406	16	14	5	7	217	20	0.7	54	371	40
16	3	68.6	25.2	6.0	166	17	18	10	9	176	27	1	64	706	52
17	2	71.0	23.3	5.5	380	34	17	13	7	642	36	1	65	253	64
18	3	71.2	20.1	8.7	131	4	2	0.6	5	25	3	7	56	74	41
19	2	67.8	23.5	8.6	101	15	14	8	9	139	18	3	86	393	72
20	2	72.2	22.3	5.4	287	25	21	5	7	460	35	0.6	54	258	84
21	2	71.5	22.2	6.3	98	18	3	15	8	390	32	1	73	101	31
22	2	79.4	17.5	3.0	201	26	43	2	7	365	36	0.9	53	269	75
23	2	73.4	19.8	6.6	336	73	24	14	8	1,464	76	0.6	93	271	61
24	2	71.2	24.0	4.5	294	24	19	6	9	2,375	11	1	67	149	52
25	2	71.0	19.7	9.2	194	63	29	68	8	395	213	1	75	320	73

Fig. 14. Table of LA-ICP-MS contents. No.: number of micro samplings carried out per object. Au, Ag, Cu in %, other elements in ppm. Contents for ornaments are written in italics when the relative standard deviation is higher than 20%. Ir contents are only indicative (no certified reference material available). *: solder?; **: lump of solder. Ornaments: 1: torc; 2: torc fragment; 3: torc fragment; 4: terminal disc; 5: twisted bracelet. Coins 1 to 3 are crescent staters and coins 4 to 25 are rainbow cups. © M. Blet-Lemarquand.

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