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RECENSIONES

Overbeck, Michael: Die Gießformen in West- und Süddeutschland (Saarland, Rheinland-Pfalz, Hessen, Baden-Württemberg, Bayern) mit einem Beitrag von Jockenhövel, Albrecht: Alteuropäische Gräber der Kupferzeit, Bronzezeit und Älteren Eisenzeit mit Beigaben aus dem Gießereiwesen (Gießformen, Düsen, Tiegel). Prähistorische Bronzefunde, section XIX, volume 3. Franz Steiner Verlag, Stuttgart, 365 text pages, 70 full-page tables.

The book was published in the Prähistorische Bronzefunde series, as the third volume of section XIX, in which various issues are discussed (*Sonstiges*). After the two first volumes – casting moulds discovered in the areas North of the Black Sea (Bočkarev, Leskov 1980) and metallurgy in the Nordic zone (Jantzen 2008) – the presented volume also discusses issues related to metallurgy. The reviewed volume comprises two parts, namely M. Overbeck's study on casting moulds in western and southern Germany, and an additional contribution (*Beitrag*) by A. Jockenhövel on graves containing metallurgical equipment. The two parts will be reviewed separately.

The volume is preceded by an introduction (*Vorwort*) by M. Overbeck. The Introduction is followed by the first part: *Die Gießformen in West- und Süddeutschland (Saarland, Rheinland-Pfalz, Hessen, Baden-Württemberg, Bayern)*.

The first part consists of 212 text pages with 19 in-text figures and 17 tables. It has been divided into two main parts, an introduction (*Einleitung*; pp. 1–55) and the archaeological finds (*der Fundstoff*; pp. 56–212) in the first part, followed by lists and indexes (*Verzeichnisse und Register*; pp. 339–365), the two parts separated by a study by A. Jockenhövel (pp. 213–337). The volume is closed with full-page plates (*Tafeln*; Nos. 1–70).

According to the author, the book aims to give the comprehensive presentation of materials related to metallurgy, i.e., casting moulds. Cataloguing the items was completed at the end of 2011. He presents the territorial scope of the work (Hessen, Baden-Württemberg, Bavaria, Rheinland-Palatine, Saarland) and the chronological framework, i.e., the entire Bronze Age (Br A1–Ha B3). It is worth noting that the bibliography was supplemented with a query conducted in institutions such as conservation offices and museums. The author limits the charac-

teristics of research history on Bronze Age metallurgy to his research area because of the information provided by D. Jantzen in the second volume of the XIXth PBF section (Jantzen 2008).

In the chapter of Literature on casting moulds (*Literatur zu Giessformen*; pp. 10–13) the author presents the rich literature on metallurgy, which includes information on casting moulds from outside the studied area. The cited archival sources start from the end of the 19th century and they represent considerable value for the research. Although the author indicated at the beginning of this chapter that it is impossible to present the entire bibliography on Bronze Age metallurgy, it is surprising that there is no mention of the monograph of B. R. Armbruster on bronze and gold metallurgy in the Iberian Peninsula (Armbruster 2000). (It should be noted that studies of this type on the Swedish or French territories are mentioned). In the context of the literature on the eastern states of Germany, the author cites papers of K. Simon or W. Coblenz from the 1980s, but there is a more recent catalogue of finds regarding bronze metallurgy, published by M. Bartelheim and E. Niederschlag (Bartelheim, Niederschlag 1998, 83–85).

The following pages concern the Source Criticism (*Quellenkritik*; pp. 13–21), in which the author tries to explain the small number of casting moulds compared to the enormous number of metal objects known from the period. There are also two subsections in this chapter, where the author describes the cognitive possibilities offered by the analysis of casting moulds and mentions other items that are indicators of smelting and melting.

In the chapter Material Source (*Zur Quellenlage*; pp. 21–53) the author indicates that the study is based on the analysis of 176 casting moulds, which come from 93 different sites. Most casting moulds were discovered between 1980 and 2011, which is probably a result of the increasing number of thor-

oroughly examined sites, as well as to the development of excavation and documentation techniques. He lists the percentage distribution of casting moulds made of various raw materials by the number of sites, which is illustrated in two figures (Nos. 2–3). There are five subsections in this chapter: *Höhensiedlungen*, *Flachlandsiedlungen*, *Feuchtbodensiedlungen*, *Depots*, *Gräber* (pp. 23–53), where the author presents information about finds, including the context of their discovery. The text is illustrated by numerous pie charts, tables and a map located in the Plate 69.B at the end of the publication. The detailed overview of the hoard from Heilbronn-Neckargartach is remarkable, as it contains a unique set of stone moulds. The author notes that no additional metal objects are known from hoards containing stone casting moulds.

The Introduction ends with two chapters: *Bemerkung zur Terminologie* and *Bemerkung zur Chronologie* (pp. 53–55). In the first, the author discusses the terms used in the work, e.g., concerning the type of casting moulds, which is illustrated in Figure 6. The author rejects defining moulds comprising two elements, a negative and a flat one, as bivalve. However, as the second (flat) part performed a specific task, including forming a flat part of the object and limiting oxidation of the cooling alloy, it is necessary to recognize this part as an equal element of the casting set. In the chapter on chronology, the author defines the chronological framework of the work and lists the chronological systems he uses, which is illustrated in Figure 8.

The second, longest part of the work is Materials (*Der Fundstoff*). It is constructed analogously to the work of D. Jantzen from 2008 (Jantzen 2008). The casting moulds were divided into three separate chapters according to the type of raw material used, and then carefully characterized. Those chapters are divided into seven analogous subsections which organizes the catalogue part. The information provided in the subsections concerns a detailed discussion of the number and types of items, the production of casting moulds and production traces, the use of moulds during casting, as well as related traces of their use. Information on the chronology of the finds and the area of their occurrence is also provided. This part is supplemented and illustrated with numerous figures and tables. The *Fundbestand* subsection in each chapter is divided into subsequent sections describing casting moulds used to produce specific categories and types of items. The

finds catalogue numbers correspond with the numbers in the plate section. They are described in detail (according to the PBF pattern). The most numerous group of finds, to which a significant part of the publication is devoted (pp. 96–212), are stone casting moulds. The chapter characterizing stone casting moulds ends the main part of the publication. M. Overbeck's work also contains the Lists and Indexes (*Verzeichnisse und Register*; pp. 339–365) and full-page plates (*Tafeln*; Nos. 1–70) placed at the end of the publication, after A. Jockenhövel's study.

Contribution of Albrecht Jockenhövel, Alteuropäische Gräber der Kupferzeit, Bronzezeit und Älteren Eisenzeit mit Beigaben aus dem Gießereiwesen (Gießformen, Düsen, Tiegel) (pp. 213–337).

The second part of the publication is a study by A. Jockenhövel on metallurgy related objects, discovered in graves. The study is divided into three main parts: Introduction (*Einleitung*; pp. 217–226), Catalogue of graves with the casting moulds (*Katalog der Gräber mit Gießformen*; pp. 227–269) and Evaluation (*Auswertung*; pp. 270–311). The study ends with a Summary and Perspectives (*Zusammenfassung und Ausblick*; pp. 312–317), List of literature (*Literaturverzeichnis*; pp. 318–334) and List of places (*Ortsregister*; pp. 335–337).

In the Introduction, the author indicates that the research, which formed the basis of the presented study, has already been started since the late 1960s/early 1970s and continued (with interruptions) until 2017. A. Jockenhövel discusses the definitions of the categories tool and object (*Zur Definition von Werkzeug und Gerät*), he also deals with defining a craftsman's grave (*Zur Definition eines Handwerkergrabes*). In the study, grave finds are considered as sources for acquiring knowledge about crafts. The author points to various concepts related to equipping the graves and the personal belongings of the buried. Based on the rich literature, the author also focuses on the history of research on burials with tools related to metallurgical activities.

In the second part of the work, the author presents a catalogue of graves containing casting moulds. The materials come from all over Europe, as illustrated in Fig. 2. The sites have been catalogued and presented in an extensive Table 1 (pp. 228–231), which includes a large amount of information, such as the number of casting moulds or types of cast objects. The table is legible, explanations of the used abbreviations are below

the table. The author distinguishes 50 graves equipped with casting moulds. He points out that the catalogue includes finds with a confirmed context, 'more or less' confirmed ('*mehr oder weniger gesicherten*'), as well as those from the area of the burial site, but not belonging to any specific grave (e.g., a burial mound). The catalogue is divided chronologically, and the finds were described according to the formula known from other PBF volumes. The inventory of the graves is illustrated in numerous figures (Nos. 3–28) of exceptionally good quality.

The high-quality catalogue contains a lot of valuable information on the circumstances of discovery, descriptions of metallurgical items, their chronology, the place of storage and bibliographical information. However, there are a few minor errors in it, mainly concerning the area of the Lusatian culture. This is understandable as the information is published mostly in Polish. I briefly explain these inaccuracies. In the case of grave no. 89 from Karzec the presence of a casting core in the grave inventory was not considered (See Malinowski 1982, 250). The catalogue did not include a unique metal bivalve casting mould from Brzeg Głogowski (Lower Silesia) which was found with an axe matching the negative (Seger 1936, 150; Malinowski 1982, 250). The circumstances of the mould discovery are not entirely clear. It was discovered along with potsherds in the vicinity of a known Late Bronze Age cemetery. Therefore, it should be considered highly probably that it originated from the grave inventory. In Legnica cemetery (Spokojna Street) there were three graves with metallurgical tools. Grave no. 5 was equipped with bivalve clay casting moulds (8 items), a casting core and a fragment of a casting tuyere; grave no. 42 with two sets of bivalve stone casting moulds for socketed axes; grave no. 153 with one bivalve stone casting mould for socketed axes. The author's 'mistake' is understandable because he used the PBF work of M. Gedl (Gedl 2004, 112–113), where incorrect information was provided owing to the lack of comprehensive publication of materials from this site, published only in 2016 (Nowak, Stolarczyk 2016). Additionally, the catalogue lacks information on the casting mould from a grave found in Budapest-Csepel Island (Horváth 2004, Fig. 17, 6). In case of the bivalve mould from Falkenberg a drawing of the items is available in the literature (Feldhaus 1914, Fig. 323; Nessel 2013, 471). The find assemblage from Wenkheim (Werbach-Wenkheim) was included in the catalogue, but in the same vol-

ume it was recognized by M. Overbeck as a deposit located in the mound embankment (pp. 137). In another part the Wenkheim assemblage was recognized by the author as funerary hoard (*Grabhort*, pp. 271), as a probable hoard (pp. 276) or a hoard of casting moulds (*Gießformenhort*; pp. 286) and it leads to some ambiguity.

In the next part, entitled Evaluation (*Auswertung*), the author analyses several issues related to graves with casting moulds. He distinguishes three categories of sepulchral objects with casting moulds and defines their chronology (from the Bell Beaker culture to the Early Iron Age). He aptly notices that the increase in the number of finds is manifested during the Late Bronze Age, and it is clearly visible in the western part of the Lusatian culture area. In the chapter titled *Zum sozialen Kontext* the author discusses the issues of gender and age of the deceased and draws attention to their social position. His compilation shows that we have a small number of anthropologically analysed graves, equipped with both casting moulds and other tools. The social status of the buried is determined according to the grave furnishings. The author also discusses the exchange of knowledge on casting technology, along with a suggestion about the hereditary system of transferring knowledge and learning from an early age. In two subsections of the chapter *Zum Funktion* the author describes the arrangement of casting moulds in the graves and discusses the types and origin of the stone raw materials. The highly important problems of the distribution of stone raw materials for casting moulds as well as of the regional and supra-regional stone exchange networks are also raised. The issues of using casting moulds, use-wear, and production traces, as well as their state of preservation (set or individual pieces) are also discussed. The author points out the reasons for the deposition of incomplete or damaged moulds. As an example of the deposition of moulds 'after their death', he mentions the casting moulds from Klein Jauer. He also indicates the possibility of assembling casting moulds (objects on their opposite) as a substitute for metal objects. In the following chapter he discusses in detail items produced in casting moulds which were discovered in graves (pp. 284–298).

In the Evaluation there is a catalogue of casting tuyeres and crucibles, which occurred in a total of 21 graves. The author describes these object categories and their types, discusses their shape and methods of use during work. The catalogue covers

tuyeres from the Early (straight tuyeres; *Blasrohre*) and the Late Bronze Age and the Early Iron Age (bent tuyeres; *gebogene Düsen*) and it is supplemented with figures (Nos. 31–34). The subsection ends with comments on the symbolic meaning of tuyeres. In the research area six graves with crucibles came to light, all of these specimens show traces of heat and metal or slag residues. They were used in the Early and Late Bronze Age and in the Early Iron Age.

In the summary of the Evaluation the author discusses the set of manufactured items based on the analysis of the mould's negatives. He points out that most of the discovered moulds are made for casting socketed axes or knobbed sickles. He also calls attention to the lack of graves in Central Europe containing the complete equipment of the casting workshop (crucibles, tuyeres, and casting moulds).

The whole study was summarized in the chapter "Summary and Perspectives" (*Zusammenfassung und Ausblick*). Noteworthy is the citation of textual material from the Sumerian source depicting several rituals, taboos, and recommendations regarding the production process, today unidentifiable by archaeological methods.

The new publication of the PBF series is extremely valuable not only in terms of the shared database with detailed descriptions of the finds, but also owing to the amount of information on casting production throughout Europe. A detailed description of the finds carried out by M. Overbeck, together with important information on the production of casting moulds and their use, contributes to our knowledge on prehistoric metalworking. M. Overbeck's work is a complete collection of sources from the targeted area. The sources have been clearly catalogued, the text is supplemented with illustrations of exceptionally good quality, charts and tables, as well as maps showing the locations of the finds. The work of A. Jockenhövel significantly contributes to supplementing our knowledge of burials with metallurgical tools. The material compiled by the author is the result of many years of work, which allowed him to analyse the discussed items and related cultural phenomena in a multilateral manner. The whole publication is an excellent source for comparative analyses for the rest of Europe. It complements our knowledge and serves as inspiration for further studies.

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