

## **Avian artefacts in the collections of the Archaeological Museum in Kraków**

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**Abstract.** A group of avian artefacts had been studied from the collections of the Archaeological Museum in Kraków. Some of the objects among the artefacts are made of bone, some are artefacts possessing utilitarian significance, while others are works of art related to magic and faith. They demonstrate the artistic abilities of the ancient creators, who came from cultures displaced in space and time. The medium and large birds coexisting with these people in their surroundings became the inspiration for such creations.

**Key words:** Avian artefacts, species, prehistoric art, Poland, Egypt, Peru.

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### I. INTRODUCTION

The collection of the Archaeological Museum in Kraków contains many avian artefacts. The artefacts come from a wide temporal range, from the Neolithic to the Middle Ages. Among them, there are artefacts made of animal bone, metal or ceramics. Included are images of birds on pottery or on metal objects, as well as an Egyptian false mummy of a falcon. All objects mentioned are distinct from dietary remains and belong to the so-called special artefacts, because the intention of their creators were not to satisfy utilitarian needs (MARCINIAK 1996, WĘGRZYNOWICZ 1982). A great variety of cultural contexts in which bird artefacts are recognized show that birds played a great role in man's history, even though remains of birds are relatively rare in comparison with those of mammals. Although the bird depictions are often stylized and the objects made from bird bones are often processed it is possible to recognize the birds taxonomically. This can give evidence about the environments which surrounded our ancestors.

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## II. ARTEFACTS FROM MAŁOPOLSKA (CURRENTLY TERRITORY OF SOUTH POLAND, WEST UKRAINE AND BELORUS)

The artefacts described in this research paper have been chosen from the Museum's collections on the basis of available written sources and oral information obtained from archaeologists employed in the Museum. The artefacts differ archeologically: they are dated to between 6.000 B. C. and 1.000 A. D., come from different cultural spheres and traditions, and document different types of locations (settlement, graveyard, kurhan). Otherwise they represent functional categories such as tools, jewels and instruments. The subject of birds has been taken to be a basis of choosing objects from among many different artefacts. The artefacts are made from different kinds of materials as bone, clay and metal. Taking under consideration the material of which the artefacts were made they were separated into two categories: objects of bone and figurines of clay and metal.

### Objects made of bone

An amulet was found in Pucilkowicze, in the region of Borysów (Belorus). The necklace was made of four-pieces of bone and dated to the early Middle Ages (Fig. 1). It was found in a Slavic barrow cemetery as burial goods. The bones are burned black. Such bones are found among burned human bones on the embankments of Slavic barrows (KACZANOWSKI, KOZŁOWSKI 1998). The amulet was made from the right carpometacarpus of a bird (29 mm length). The bone (the second from left) probably belonged to a kind of Hen *Gallus gallus* (LINNAEUS, 1758). Hens were then commonly raised and it is very likely that the bone, making up a part of the bracelet, belonged to a



Fig. 1. Bones of a four-piece necklace. Pucilkowicze, Borysów region, Belorus (phot. Jarosław WRÓBEL).

Hen. For making a bracelet a Willow Grouse *Lagopus lagopus* (LINNAEUS, 1758) could also be used. The Willow Grouse's present breeding range reaches northern Lithuania (CRAMP, SIMMONS 1980). Apart from the bird bones present in the bracelet there were two bones of a mammal (the first and third from left). They were the heel bones of a rabbit or a hare (*Oryctolagus cuniculus* LINNAEUS, 1758/*Lepus europaeus* LINNAEUS, 1758).

Artefacts of unique value determined as being from the Tripolie culture were found in a cave called Werteba in Bilcze Żłote, in the area of Borszczow (currently in Ukraine). Many bone objects were found (tools, different types of prestige objects) among other excavated materials. Most of the finds were made from mammal bones and horns, and only four from bird bones. One artefact was recognized as an awl with a length of 71 mm (Fig. 2), made from a Hen's *Gallus gallus* tibiotarsus bone. It was the first find of this kind in the area. The only analogous example known from the literature is an awl made from the tarsometatarsus of a White-tailed Eagle *Haliaeetus albicilla* (LINNAEUS, 1758) found in Aartsound in Holland (WIINGAARDEN-BAKKER 1997). The other three objects from Bilcze are known as "bone pipes". They are shown in a table together with pipes coming from other localities (Table I, Fig. 3).



Fig. 2. Awl. Bilcze Złote, Ukraine (phot. Jarosław WRÓBEL).

Table I

## Assemblages with bone tubes (in chronological order)

Figs	Locality	Site type	Culture	Element	Length (in mm)	Species determined
3 A	Samborzec, village in Tarnobrzeg Prov.	Settlement	linear band pottery culture	tibiotarsus	69.5	Swan <i>Cygnus</i> sp. ?
3 B	Książnice Wielkie, near Kazimierza Wielka	Settlement	funnel beaker culture (?)	tibiotarsus	71.8	Great Bustard <i>Otis tarda</i> LINNAEUS, 1758 or crane <i>Grus</i> sp.
3 C	Mników, near Kraków	“Na Łopiankach” Cave	Neolithic	ulna (?)	68.2	Great Bustard <i>Otis tarda</i> , swan <i>Cygnus</i> sp., eagle <i>Aquila</i> sp., or vulture <i>Aegypius/gyps</i> sp.
3 F	Bilcze Złote, village in Tarnopol Prov., Ukraina	“Werteba” Cave	tripolie culture	radius	125.4	Common Crane <i>Grus grus</i> (LINNAEUS, 1758)
3 G	Bilcze Złote, village in Tarnopol Prov., Ukraina	“Werteba” Cave	tripolie culture	radius	180.0	Swan <i>Cygnus</i> sp.
3 H	Bilcze Złote, village in Tarnopol Prov., Ukraina	“Werteba” Cave	tripolie culture	long bone	15.0	Great Bustard <i>Otis tarda</i> , Common Crane <i>Grus grus</i> , swan <i>Cygnus</i> sp., eagle <i>Aquila</i> sp., or vulture <i>Aegypius/gyps</i> sp.
3 D	Niesłuchów, village in Tarnopol Prov., Ukraina	Settlement	Middle Ages	tibiotarsus	87.7	Greylag Goose <i>Anser anser</i> (LINNAEUS, 1758) or Bean Goose <i>Anser fabalis</i> (LATHAM, 1787)
3 E	Niesłuchów, village in Tarnopol Prov., Ukraina	Settlement	Middle Ages	ulna	74.9	Greylag Goose <i>Anser anser</i> or Bean Goose <i>Anser fabalis</i>

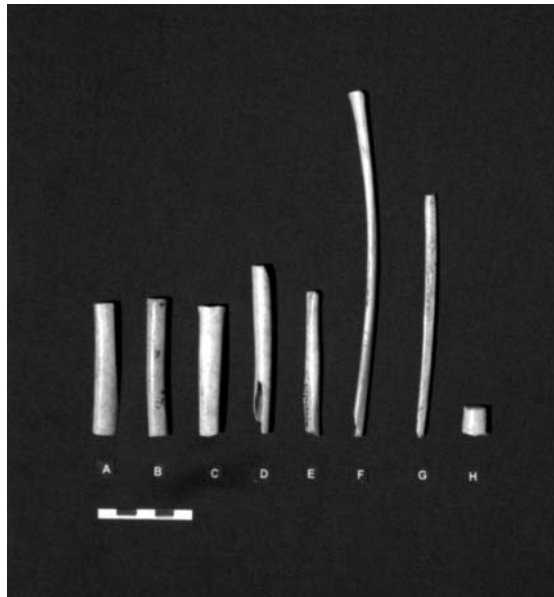


Fig. 3. Bone pipes: A – Samborzec; B – Książnice; C – Mników; D-E – Niesłuchów; F-H – Bileze Złote; see also Table I (phot. Jarosław WRÓBEL).

All pipes described in the study are dated from the Neolithic to the Middle Ages. When we took into consideration the technological side of manufacturing the pipes we did not notice any visible differences. All of them were made in the same way, by removing both bone ends and polishing the edges. The walls of pipes were also polished over their whole surfaces. The function of the pipes has not been explained as yet. CNOTLIWY et al. (1983) studied pipes which were found in the surroundings of Szczecin and suggested that they could be used in weaving. TUNIA (1997) describes a pipe, which was probably used while ritually milking animals. There are also suggestions that pipes were used to stamping pottery (NORSKA-GULKOWA 1985, KOROBKOWA 1999). LASOTA-MOSKALEWSKA (2000) suggests that bird bones played an important role only in the manufacture of musical instruments. JAWORSKI (1990) supports the last interpretation. He suggests that the morphological features of bird bones (large interior hollows and thin walls) are especially desired while making musician instruments (pipes, flutes and whistles). There were four objects found in Niesłuchów (Table I), recognized as instruments. As they were found in a cluster, it is possible that they could be parts of a single instrument. The bones of birds, as well as mammals, were recognized in the find. Apart from birds there were bones of goat *Capra hircus* LINNAEUS, 1758 or sheep *Ovis aries* LINNAEUS, 1758 recognized as tibias, from which a whistle was made and foot bones from which a pipe was made. Finds coming from the Middle Ages suggest that the most common resource for making musical instruments were sheep bones followed by those of bird bones (LASOTA-MOSKALEWSKA 2000). The results of analyzing the materials from Niesłuchów support this observation. It is possible that the above mentioned birds lived near the place of finding because they belong to the kind of animals of open areas like steppe (Great Bustard *Otis tarda*), marshy meadows and swamps (cranes) or aqueous areas (swans). All these habitats are located as close as 300 km from the place of deposition. Apart from this, the species mentioned are known from the archaeological excavations located in the area of contemporary Ukraine (UMANSKAYA 1972, 1978) and belong to the contemporary fauna of this area – except for the swan, which hatches in the North Poland and in the coast of Black Sea (CRAMP, SIMMONS 1977, 1980). Swan remains are found from Vistulian until the Middle Ages layers (BOCHEŃSKI 1993). Swans are closely bound to water so their oc-

currence in the area of the Vistula, San and Dniepr rivers is very likely (CRAMP, SIMMONS 1997, 1980). Three of the pipes, which were analyzed by our team, could belong to the Great Bustard. Today this species distribution includes Central and South-East Europe as well as an island occurrence (CRAMP, SIMMONS 1980, GLUTZ v. BLOTZHEIM, BAUER, BEZZEL 1973). In the past the Great Bustard mostly occurred in the lower unforested areas of Poland (BERESZYŃSKI 2001). The closest localities (Holocene) are known from West Poland (BOCHEŃSKI 1993), and Pleistocene localities from the Ukraine (UMANSKAYA 1978). As a big bird (1 meter of height and even 17 kilos of weight) the Great Bustard was hunted and probably was a notable source of meat (TOMEK, BOCHEŃSKI 2002). Goose bones were recognized in Niesłuchów from the Medieval layer. Geese were widespread birds as confirmed by the multiple finds from excavations over the whole of Poland and the Ukraine (BOCHEŃSKI 1993, UMANSKAYA 1972). The geese belonged to farmed as well as hunted individuals. The lack of skeletal differences between wild and domesticated geese (BACHER 1967) do not allow precise bone identification.

### Figurines

There are three rattles made of clay, with bird representation and one vessel with ornamental decorations showing birds. The two rattles are dated as of the Lengyel culture. One of them is 42 mm in height and is preserved in its entirety (Fig. 4), although the second one is only partially preserved. The figurines present birds in a vertical position (sitting) with open and upwardly pointing beak. Each of the figurines has an opening (for a string?) in the place of an eye. The figurines show nestlings of birds of prey, sitting in the nest and begging for a meal. Such rattles have not been known among artefacts of the Lengyel culture. The third rattle comes from the Lusatian culture position in Baczyn, in the Kraków area (Fig. 5). The artefact was found in a human grave, in a cemetery of mixed burial ceremonies. Some of the results were published (PROKOPOWICZ-KRAUSS 1967), but rattles' data come from unpublished notes. The height of the artefact is 89 mm. Body proportion (average length of legs and neck, large, almost spherical trunk, triangular head) indicate that its prototype was a Great Bustard in courtship position (GLUTZ, BAUER, BEZZEL 1973, ISAKOV, FLINT 1987). Great Bustard as a large bird must have been noticeable in environment so this is why it was used as a motif while making utilitarian and artistic objects. The rattles expressing birds in standing position were widespread on the whole area of Lusatian culture.

According to GEDIGA (2002) most of figurines are of water birds associated with the solar cult. The figurine of a Great Bustard, which is a large land bird, can be placed in the group of rattles, which, according to the author, was significant to defense magic.

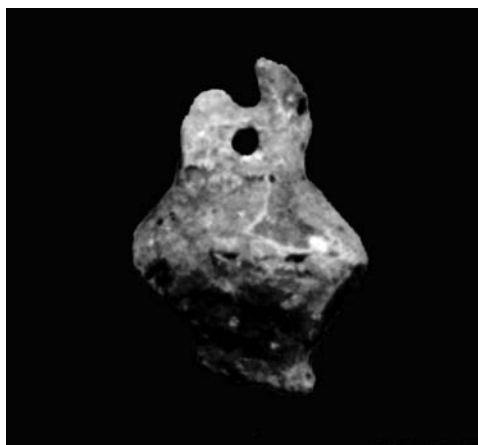


Fig. 4. Clay rattle. Kraków (phot. Jarosław WRÓBEL).



Fig. 5. Clay rattle. Baczyn (phot. Jarosław WRÓBEL).

There is another clay artefact, a vessel, a kind of terra sigillata (Fig. 6 a-b), a decorated relief which was found in a layer from the Roman Period. The artefact was found in Lisów, in the Opatów area. It is a kind of bowl, 90 mm high, very richly decorated around the circumference with eight bird/mammal ornaments (BURATYŃSKI 1973). Roman pottery, including this bowl, is found in the whole area of Barbaricum. Poland has pottery from Southern Gaul presumably from the Amber Route (KACZANOWSKI, KOZŁOWSKI 1998). Some birds on medallions, which according to their wide wings, short legs with straight toes, as well as big, massive beaks may belong to the Bucerotidae living in areas including southern Africa (FRY, KEITH, URBAN 1988). The rest of them show birds of prey.



Fig. 6. a – Clay vessel, terra sigillata. Lisów; b – detail (phot. Jarosław WRÓBEL).

The collection also contains metal objects. These are bronze fastener-links, coins and a bronze object with a handle shaped like a swan neck.

The fastener-links (Fig. 7) comes from Smerkivka (Wicyń before), in the Złoczów area (presently in the Ukraine). The artefact is characteristic of the Kimeric horizon it was found in (CHOCHOROWSKI 1993). The length of the artefact measures 335 mm. It is a part of a harness made from loosely connected rings, from among which the two extreme ends have pendants tipped with bird heads. The object possessed a double function: utilitarian (fastener-link) and aesthetic. As a decorative motif duck heads were used. Such motifs of water birds (ducks, geese, swans) belong to the widespread stylistic trends of the Central European arts in the Lusatian culture as well as in the Halstatt culture (GEDIGA 1970, 2002).

There is one bronze artefact found in the Museum collections with unknown origin. It has a handle shaped as a swan's neck (length of 180 mm). The artefact, according to one suggestion (CHOCHOROWSKI 1993, GEDIGA 2002) may be recognized as an object from the Halstatt culture. The handle represents a head and a neck of a swan (Fig. 8).

The silver coin shown on Figure 9 was found in the province of Kraków. There is an inscription "Sigismundi 1511" with heraldic image "Pogoń" on one side, and on the other the Eagle and "Magniducislituanie".

### III. ARTEFACTS FROM EGYPT

The Egyptian collections in Archaeological Museum in Kraków come from three sources. First was the excavation of Tadeusz SMOLEŃSKI followed by the artefacts from the excavations at the beginning of 20<sup>th</sup> century, lead by Hermann JUNKER. The last and the largest collection was collected by Jarosław SAGAN, the guardian of the so-called Field Museum no. 2, established by Polish Bri-



Fig. 7. Bronze fastener-links. Smerkivka (phot. Jarosław WRÓBEL).

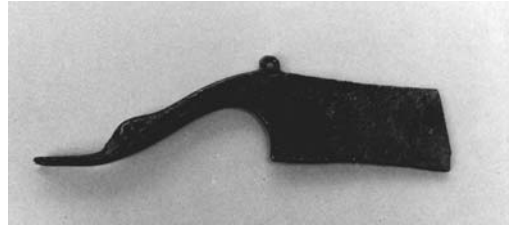


Fig. 8. Bronze artefact with a handle shaped as a swan's neck. Unknown origin (phot. Jarosław WRÓBEL).



Fig. 9. Silver coin from 16th century. Surroundings of Kraków (phot. Jarosław WRÓBEL).



Fig. 10. Ibis sarcophagus. Egypt (phot. Tomasz KALARUS).

gade of Carpatian Rifles fighting in the Middle East during the II World War (BABRAJ, SZYMAŃSKA 2000).

There are a few representatives of ibis among the Egyptian artefacts in the Museum's collection. In Figure 10 a sarcophagus is shown shaped like an ibis (30 cm height, Tuna el-Gebel, 26<sup>th</sup> dynasty). The birds' trunk was made of wood, but the beak, legs and neck are of bronze. The next artefact (Fig. 11) is a figurine made of bronze and wood (8.4 cm height, Tuna el-Gebel, Saite period) representing a sitting ibis with a collar on its neck. The ibis figure was the embodiment of the god Thot, which was a patron of writers, the legendary inventor of the alphabet and a healer. Hermopolis was the main source of its cult. According to Egyptian cosmology, the beginning of World became when the great egg hatched by ibis had broken apart (NIWIŃSKI 1995).

One of the animal mummies is shaped like a falcon (Fig. 12). The height of this artefact is 36.5 cm and it comes from Ptolemaic-Roman period. There is an unrecognizable deposit of bones hidden under bandages soaked with resin, except for the bird's jaw which is probably that of a falcon (LASOTA-MOSKALEWSKA 2000). It is an example of a false mummy. The demand for falcon mummies personifying Horus was very large in Ptolemaic-Roman period, so they were manufactured on a large scale. At this time the process of mummy faking had become widespread.



Fig. 11. Ibis figurine. Egypt (phot. Tomasz KALARUS).

On a piece of a shroud (Fig. 13) there is a figure of falcon whose head is shaped like Horus' eye within a radial halo with a star inside. The Izyda is placed on the right side, above her Harpokrates (childish form of Horus), below a figure of a man (probably dead). The preserved piece (68.7 cm) is made from linen soaked with resin (Sakkara, 2<sup>nd</sup> century A.D.).



Fig. 12. Mummy of a falcon. Egypt (phot. Tomasz KALARUS).



Fig. 13. Fragment of a shroud. Egypt (phot. Tomasz KALARUS).

An image of a falcon is also visible on the portable chapel-shaped lantern (height 9.5 cm) which has columns (Fig. 14). Artefacts of this type are known from the Early Ptolemaic and the later Roman Period necropolies of Alexandria. The production of this item included the firing of a mixture of Nile silt and organic temper (2<sup>nd</sup>-3<sup>rd</sup> century A.D.).

There are also some ornithological motifs located on incense holders. Figure 15 shows a tank for fragrances equipped with a bird figurine (9.5 cm height). The artefact is made of Nile silt with some traces of milk of lime and pink paint (2<sup>nd</sup>/3<sup>rd</sup> century A.D.).





Fig. 14. Chapel-shaped lantern (phot. Tomasz KALARUS).



Fig. 15. Incense holder. Egypt (phot. Tomasz KALARUS).

Bird motifs are also found in late Egyptian artefacts from the Christian period. There are motifs of nets with fish, and a bird image on the jug covered with pink paint (Fig. 16). There is a repeated set of motifs in Coptic artefacts, where images of birds are the most numerous (EGLOFF, KELLIA 1977). The artefact is made of Nil silt (height 15 cm, Coptic period, 5-8<sup>th</sup> century A.D.).

The pigeon belongs to the most frequently presented birds in Coptic period. Images of this bird are very often identified with the Holy Spirit and are found on Stella's from this period. The museum collection includes a partially preserved Stella (Fig. 17) made of lime (28 cm height) and showing a pigeon sitting on the frontage of a temple (6-7<sup>th</sup> century A.D.).



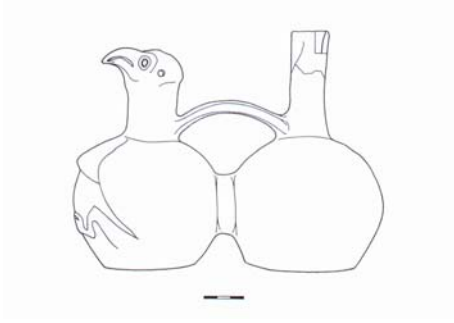
Fig. 16. Jug with a bird motif. Egypt (phot. Tomasz KALARUS).



Fig. 17. Fragment of a stela. Egypt (phot. Tomasz KALARUS).

#### IV. ARTEFACTS FROM PERU

A collection of Peruvian vessels (Fig. 18 a-g) in the Archaeological Museum in Kraków was excavated by Władysław KLUGER. It is the largest polish collection of pre-colombian artefacts from



18a



18b



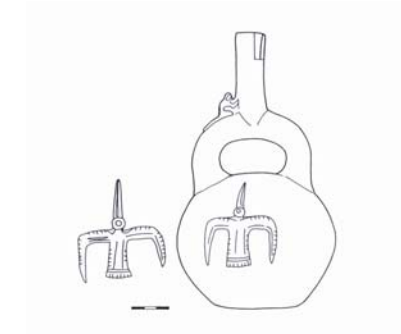
18c



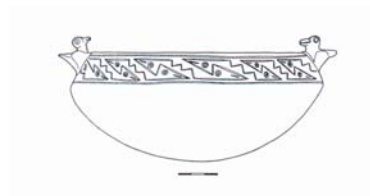
18d



18e



18f



18g

Fig. 18. Peruvian vesels. A-C – whistling vessels; D-G – vessels with pelican motifs. Peru (drawn by Eunika CHROBRY). Bars equal 3 cm.

Peru. The vessels presented here belong to the typical Chimu products (10-15<sup>th</sup> century A.D.). The artistic and technical quality of the vessels is very high. This type of pottery was made of clay and was fired in a very reduced atmosphere at temperatures of 700-1000°C. The colour of pottery is dark-gray or black (WOŁOSZYN 1998). Figures 18 a-c show two-piece vessels with bird heads. Such objects ("whistling vessels") emit a noise when blown or if liquid is poured into them. They are considered to be vessels or musical instruments (GARRET, STAT 1977). The images of birds' heads are similar to the Rufous-breasted Wood-Quail *Odontophorus speciosus* TSCHUDI, 1843 that lives in the tropical forests of Peru (TACZANOWSKI 1886, OLROG 1968). The birds, which appear on vessels (Fig. 18 d-f) probably represent pelicans (*Pelecanus* sp.), single birds as well as adults with young. Pelicans feed nestlings by releasing fish from their throats into the beaks of their young. Due to this they hold their beaks downwards, the blood of the fish very often soils their breast feathers. This gave the ancient Peruvians reason to think that pelicans tear their breasts apart to feed offspring. This is why they were presented as emblems of parental love (TACZANOWSKI 1882). The image on the vessel in Figure 18d may be an example of a young bird pecking an adult in order to feed of its parents flesh.

#### REFERENCES

- BABRAJ K., SZYMAŃSKA H. 2000. The gods of Ancient Egypt. Archaeological Museum, Cracow.
- BACHER A. 1967. Vergleichend morphologische Untersuchungen an Einzelknochen des postkranialen Skeletts in Mitteleuropa vorkommender Schwäne und Gänse. Inaugural-Dissertation der Tierärztlichen Fakultät der Ludwig-Maximilians-Universität München.
- BERESZYŃSKI A. 2001. *Otis tarda* (Linn, 1758) Drop. Pp: 183-186. [In:] Z. GŁOWACIŃSKI (ed.). (Polska Czerwona Księga Zwierząt) Kęragowce. Wyd.2. Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.
- BOCHENSKI Z. 1993. Catalogue of fossil and subfossil birds of Poland. *Acta zoologica cracoviensia*, **36**(2): 329-460.
- BURATYŃSKI S. 1973. Zabytki z okresu wpływów rzymskich, z Woli Pawłowskiej, pow. Lipsko i Lisowa, pow. Opatów. *Sprawozdania Archeologiczne*, **25**: 83-192.
- CRAMP S., SIMMONS K. E. L. (eds). 1977. The Birds of the Western Palearctic. Ostrich to Ducks, Vol. 1. Oxford University Press, Oxford, London, New York.
- CRAMP S., SIMMONS K. E. L. (eds). 1980. The Birds of the Western Palearctic. Hawks to Bustards, Vol. 2. Oxford University Press, Oxford, London, New York.
- CHOCHOROWSKI J. 1993. Ekspansja kimeryjska na tereny Europy środkowej. Rozprawy habilitacyjne nr 260. UJ, Kraków.
- CNOTLIWY E., LECIEJEWICZ L., ŁOSIŃSKI W. 1983. Szczecin we wczesnym średniowieczu. Wzgórze Zamkowe. Ossolineum, Wrocław-Warszawa-Kraków-Gdańsk.
- EGLOFF M., KELLIA. 1977. La poterie copte. Recherches suisses d'archeologie copte, III, 55-60, Geneve.
- FRY C. H., KEITH S., URBAN E. K. 1988. The birds of Africa. Vol. 3. Academic Press, London.
- GARRET S., STAT D. K. 1977. Peruvian Whistling Bottles. *The Journal of the Acoustical Society of America*, **62**(2): 449-453.
- GEDIGA B. 1970. Motywy figuralne w sztuce ludności kultury łużyckiej. Ossolineum, Wrocław.
- GEDIGA B. 2002. O sztuce w epoce brązu i wczesnej epoce żelaza na ziemiach polskich. Pp: 85-98. [In:] Sztuka pradziejowa ziem polskich. Muzeum Początków Państwa Polskiego. Gniezno.
- GLUTZ v. BLOTZHEIM U. N., BAUER K. M., BEZZEL E. (eds). 1973. Handbuch der Vögel Mitteleuropas **5** (Galliformes und Gruiformes). Akademische Verlagsgesellschaft, Frankfurt am Main.
- ISAKOV J. A., FLINT V. E. 1987. Gattung *Otis* LINNAEUS, 1758. [In:] IL'ICEV V. D., FLINT V. (eds) – Handbuch der Vögel der Sovietunion. **4** (Galliformes. Gruiformes.). Ziemsen Verlag, Wittenberg Lutherstadt.
- JAWORSKI K. 1990. Wyroby z kości i poroża w kulturze wczesnośredniowiecznego Ostrowa Tumskiego we Wrocławiu. Resortowy program badań podstawowych RP III 36. "Przeobrażenia społeczne i narodowe na Śląsku". Volumen, Wrocław-Warszawa.
- KACZANOWSKI P., KOZŁOWSKI J. K. 1998. Najdawniejsze dzieje ziem polskich. Vol.1 [In:] Wielka Historia Polski. Fogra, Kraków.
- KACZMAREK M. 2002. Motywy antropo- i ornitomorficzne oraz wyobrażenia jelenia w sztuce ludności kultury łużyckiej na ziemiach polskich. Pp: 99-103. [In:] Sztuka pradziejowa ziem polskich. Muzeum Początków Państwa Polskiego, Gniezno.
- KAMIENSKA J. 1964. Osady kultur wstęgowych w Samborcu, pow. Sandomierz. Studia i Materiały do Badań nad Neolitem Małopolski. *Prace Komisji Archeologicznej PAN*. **4**: 77-189.

- KOROBKOWA G. 1994. Narzędzia w pradziejach. Podstawy badania funkcji metodą traseologiczną. Uniwersytet Mikołaja Kopernika, Toruń.
- LASOTA-MOSKALEWSKA A. 2000. Rola ptaków w życiu ludzi od starożytności do średniowiecza. [In:] BOCHENSKI Z. (ed.). *Podstawy Archeozoologii. Ptaki*. PWN, Warszawa.
- MARCINIAK A. 1996. Archeologia i jej źródła. Materiały faunistyczne w praktyce badawczej archeologii. PWN, Warszawa.
- NIWIŃSKI A. 1995. Mity i symbole starożytnego Egiptu. Pro-Egipt, Warszawa.
- NORSKA-GULKOWA M. 1985. Wyroby z rogu i kości z wczesnośredniowiecznego grodu-miasta na Ostrówku w Opolu. *Opolski Rocznik Muzealny*, 8: 221-308.
- OLROG C. Chr. 1968. Las aves Sudamericanas. Universidad Nacional de Tucumán. Fundación - Industrio "Miguel Lillo", San Miguel de Tucumán.
- PROKOPOWICZ-KRAUSS J. 1967. Cmentarzysko kultury łużyckiej w Baczynie, pow. Kraków. *Materiały Archeologiczne*, 8: 133-158
- ROOK E., TRELA E. 2001. Stanowisko kultury trypolskiej w Bilczu Złotym, w dawnym powiecie Borszczów, w świetle zbiorów krakowskich. [In:] J. LECH, J. PARTYKA (eds) – *Z archeologii Ukrainy i Jury Ojcowskiej*. Ojcowski Park Narodowy, Muzeum im. Prof. Wł. Szafera. Ojców 2001. Pp: 183-206.
- SKORUPKA T. 2002. Grzechotki gliniane z cmentarzyska kultury łużyckiej w Kowalewku, woj. wielkopolskie. Pp: 104-108. [In:] *Sztuka pradziejowa ziem polskich*. Muzeum Początków Państwa Polskiego, Gniezno.
- TACZANOWSKI W. 1882. Ptaki krajowe. 1. Akademia Umiejętności, Kraków.
- TACZANOWSKI W. 1886. Ornithologie du Prou. 3. Oberhur. A. Rennes.
- TOMEK T., BOCHENSKI Z.M. 2002. Scraps from a Greek table: The case of Klisoura Cave. [In:] *Proceedings of the 4th Meeting of the ICAZ Bird Working Group Kraków, Poland, 11-15 September, 2001. Acta zoologica cracoviensia*, 45(special issue): 133-138.
- TUNIA K. 1979. Cmentarzysko kultury ceramiki sznurowej w Koniuszy, woj. Kraków. *Sprawozdania Archeologiczne*, 31: 47-77.
- UMANSKAYA A. S. 1972. Domashniye ptitsy iz arkhelogicheskikh pamiatnikov Ukrainy. [Domesticated birds from archaeological sites of Ukraine]. [In:] *Prirodnaya obstanowka fauny proshlogo*. Akademia Nauk Ukrainskoy SSR. Kiyev. 6: 71-6. (In Russian).
- UMANSKAYA A. S. 1978. Ptitsy pozdnego paleolita Ukrainy. [The birds of the late Palaeolithic of Ukraine]. *Doklady Akademii Nauk Ukrainskoy SSR*. Seria B. No.7: 659-662. (In Russian).
- WĘGRZYNOWICZ T. 1982. Szczątki zwierzęce jako wyraz wierzeń w czasach ciałopalenia zwłok. Państwowe Muzeum Archeologiczne, Warszawa.
- WIJNGAARDEN-BAKKER L. H. van. 1997. The selection of Bird Bones for Artefacts Production at Dutch Neolithic Sites. [In:] D. SERJEANTSON (ed.) – *Subsistence and symbol*. Papers from the ICAZ Bird Working Group meeting, 1995. *International Journal of Osteoarchaeology*, 7: 339-345.
- WOŁOSZYN J. 1998. Corpus Antiquitatum Americanensium. Pologne I. Peruvian pottery from the collection of the archaeological museum in Cracow. Acadmie Polonaise des Sciences et des Letters. Kraków.