

TADEUSZ GRABARCZYK

FIREARMS IN THE EQUIPMENT OF MERCENARY TROOPS OF THE KINGDOM OF POLAND IN 1471-1500

Firearms first appear in Europe in the first half of the 14th c. The cannon was first used in Poland in 1383, during the siege of the town of Pyzdry in Greater Poland¹. It is, however, more difficult to say since when hand-held firearms were used in the territory of Poland. The earliest specimens of hand-held firearms which were discovered in the territory of Poland are dated to the late 14th c.² The earliest mention in written sources comes from 1410 when it was recorded that one of the municipal guards in Kraków had been armed with a *handbuchse*³.

A considerable role in spreading of such weapons in the territory of Poland was played by the Hussites, who were often hired by the kings of Poland as mercenaries in the 15th c.⁴ A lot of time had passed before hand-held firearms found their widespread use.

Medieval registers of Polish mercenary troops are a valuable source for examining the role of hand-held firearms in Poland. These registers survived for the following years: 1471, 1474, 1477, 1496-1498 and 1500. They contain data on nearly 5500 infantrymen and more than 1500 cavalrymen⁵.

¹ Joannis de Czarnków, *Chronicon Polonorum*, ed. J. Szlachetowski, [in:] *Monumenta Poloniae Historica*, Vol. 2, Lwów 1872, p. 727.

² I understand the Polish territory as the territory of the Polish state within its present borders. For more data on the earliest archaeological finds see: P. Strzyż, *Średniowieczna broń palna w Polsce. Studium archeologiczne*, Łódź 2011, pp. 15-26, and M. Głosek, *Najstarszy zabytek ręcznej broni palnej w Polsce*, [in:] *Archeologia i starożytnicy. Studia dedykowane Profesorowi Andrzejowi Abramowiczowi w 70 rocznicę urodzin*, ed. M. Głosek, J. Maik, Łódź 1997, pp. 37-41. M. Głosek discusses a part of a hand-held firearm which was found in Kalisz. Its barrel length is 53 mm and the calibre is 13 mm. The author dates this find to 1383.

³ A. Nowakowski, *Uzbrojenie indywidualne*, [in:] *Polska technika wojskowa do 1500 roku*, ed. A. Nadolski, Warszawa 1994, p. 220.

⁴ Hussite warriors contributed to the spread of hand-held firearms. According to Hussite rules from 1430, out of 18 members of the crew of a combat wagon, 2 were to be armed with firearms; M. Goliński, *Broń palna na Śląsku do lat trzydziestych XV w. oraz jej zastosowanie przy obronie i zdobywaniu twierdz*, „Studia i Materiały do Historii Wojskowości”, Vol. 31 (1988), p. 12; Z. Żygulski jun., *Broń w dawnej Polsce. Na tle uzbrojenia Europy i Bliskiego Wschodu*, Warszawa 1982, p. 125.

⁵ Archiwum Główne Akt Dawnych (Central Archives of Historical Records) in Warszawa, Archiwum Skarbu Koronnego

These registers were made during the inspection of a detachment which commenced the service. On this occasion, all the soldiers which made up a given detachment (*rota* in Polish) were registered together with their armament. Thanks to this, the registers offer a faithful image of the actual condition of mercenary troops in the service of the kings of Poland.

Detachments of mercenary infantry in the 1470s were composed of two basic categories of soldiers – pavisiers and shooters. Soldiers of the first category were armed with large shields – pavisés and cutting weapons. Some of them also had protective armament – these were usually helmets and arm defences. Shooters were first of all equipped with crossbows, sometimes with firearms, and with cutting weapons. They sporadically wore protective armament. In the 1470s pavisiers constituted c. 16% of a detachment, while the remaining 84% were shooters⁶. As it comes out from the registers of mercenary infantry, the composition of detachments changed in the 1490s. Apart from the two afore-mentioned categories of soldiers, lancemen appeared. They were armed with lances – staff weapons slightly shorter than pikes, which were often used by Western European infantry. Lancemen wore helmets and full plate armours. Due to the appearance of lancemen, the structure of infantry detachments underwent a change. In the 1490s, detachments were composed of 10% of lancemen, 10% of pavisiers and 80% of shooters⁷.

First mentions of firearms in the equipment of mercenary infantry can be found in the registers from 1471. The term „hackbut” (*akownyczna*, *hakownyczna*) was used in them, which meant the weapon with a hook fixed in the lower part of the barrel. Hackbuts used by mercenary

(Archive of the Crown's Treasury), Oddział (Department) 85 (henceforth as: O 85), Vols. 1-4; Rachunki Królewskie (Royal Accounts), Vol. 16 (henceforth as: RK 16). Registers of cavalry from 1474 also survived, but they do not contain any data on firearms.

⁶ Sporadically, there appeared soldiers who cannot be classified into any of these two groups, e.g., combatants armed with flails. There were a few of them in the detachment of Captain Marek in 1471.

⁷ T. Grabarczyk, *Piechota zaciężna Królestwa Polskiego w XV wieku*, Łódź 2000, pp. 180-190.

soldiers were hand-held firearms, which is testified to by the fact that each of them was assigned to a single soldier. It can be assumed that these were small or medium size hackbuts, with the calibre of c. 16 mm and the weight of c. 8 kg⁸. This can be inferred from the remaining equipment possessed by soldiers with hackbuts at the time of inspection. Each soldier had a sword or a sabre, two possessed helmets and five had small shields called *pawężki* (small pavises)⁹. Furthermore, these soldiers had to have a sufficient amount of gunpowder and bullets on them¹⁰.

The next term which occurs in the registers from 1471 with reference to hand-held firearms is *piszczel* gun (*pisztzel*), which appears five times in the sources¹¹. It was the simplest form of hand-held firearms, with a short barrel which was mounted on a simple metal or wooden stock. The stock was also used to hold the weapon. One of *piszczel* guns which were recorded in the detachment of Captain Wacław was additionally referred to as „hand-held” (*Stanisław z Misłynicz z rucznu pistzely*)¹². This record, however, does not have to mean that the weapon possessed by this soldier belonged to a different type than other *piszczel* guns mentioned in the registers of mercenary troops.

The last term which can be found in the registers of mercenary troops with reference to hand-held firearms is „handgonne” (*rucznicca*). This term was first recorded in Polish sources in 1478¹³. Subsequent data on this kind of weapon come from as late as the 1490s. At that time, handgonnes occur in a widespread manner, not only in the equipment of mercenary troops, but also in castle and municipal arsenals¹⁴. In the registers of mercenary infantry from 1496-1500 the handgonne is the only kind of firearms. The term „handgonne” is to be related to firearms with well-defined butts, equipped with matchlocks and barrels of considerable length. Such a weapon is depicted in a drawing in a letter sent to the burghers of Bardiów (now Bardejov in Slovakia) by brigands marauding in the then Polish-Hungarian borderland. It is assumed that this letter was written in 1493¹⁵ (Fig. 1).

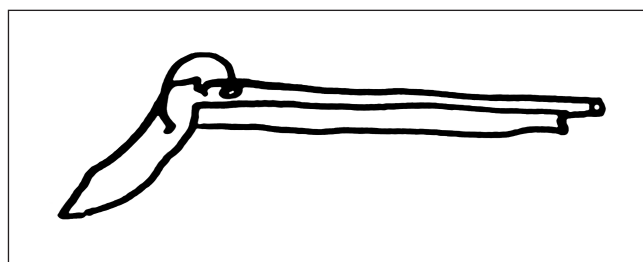


Fig. 1. Hand-held firearm (a handgonne) from the letter of brigands to the authorities of the town of Bardiów (ŠOkA p. Bardejov, 3209).

The numbers of firearms in the period between 1471 and 1500 underwent significant changes (see Fig. 2 and Table 1). In 1471 in the detachment of Captain Marek 2.2 % of shooters were equipped with firearms, while in the detachment of Bartosz – 1.8%. In the remaining detachments there was one specimen each¹⁶. In total, 2493 soldiers underwent inspection in the discussed registers from 1471, including 1782 shooters. Among them, only 16, which is less than 1%, had hackbuts or *piszczel* guns.

The next mention of firearms in the equipment of mercenaries is related to the war in Silesia in 1474. Among weapons lost by infantrymen from the detachment of Captain Bartłomiej, 7 crossbows, 5 sabres, 1 pavise and 1 bombard were registered. The captain was paid a compensation of 10 florins for the entire equipment¹⁷. If the mentioned bombard had been a cannon, the sum of compensation would have had to be significantly higher.

The fact that in the 1470s hand-held firearms were not yet widespread, is strongly confirmed by the registers from 1477. Records of nine detachments survived until present. These detachments had 409 soldiers in total, including 259 shooters. None of them had firearms, while all of them were using crossbows¹⁸.

The next registers of detachments of mercenaries come from the 1490s. Based on their analysis, it can be said that there was a clear increase in popularity of hand-held firearms among infantrymen. 987 soldiers were recorded in the registers from 1496 and in this group 27.1% of shooters were equipped with handgonnes. 817 infantrymen were registered in 1497, and as many as 54% of shooters had handgonnes. Furthermore, there were 1776 mercenaries in the records from 1498 and among them there were 60.5% of shooters with firearms. In 1500, this ratio was 82.9%¹⁹. This tendency continued and at least from the 1530s 100% of infantry shooters in the Polish service were equipped with firearms – handgonnes or arquebuses²⁰. It is, however,

⁸ K. Kozak, *Hakownice węgierskie XV-XVII w. w kolekcjach muzealnych*, „Kwartalnik Historii Kultury Materialnej” 1973, Yearbook 21, No. 2, pp. 317-318.

⁹ RK 16, f. 6, 10v, 17v, 67v, f. 68v, 95v, 97v, 98.

¹⁰ S. Kobielski, *Polska broń. Broń palna*, Wrocław 1975, p. 32.

¹¹ RK 16, f. 98.

¹² RK 16, f. 154.

¹³ *Acta capitulorum nec non iudiciorum ecclesiasticorum selecta*, Vol. 1, ed. B. Ulanowski, Kraków 1894, No. 2173.

¹⁴ J. Szymczak, *Die Feuerwaffenvorräte in den Schloß- und Stadtarsenalen in Polen in der 2. Hälfte des 15. und am Anfang des 16. Jahrhunderts*, „Fasciculi Archeologiae Historicae”, fasc. IX (1996), p. 13, id., *Początki...*, p. 45.

¹⁵ Štátný okresný archiv v Levocy, pobočka Bardejov, No. 3209; T. Grabarczyk, *Uzbrojenie mieszczan bardiowskich w świetle spisów z lat 1493, 1521 i 1536*, „Archeologia Historica”, Vol. 32 (2007), p. 467.

¹⁶ RK 16, f. 6, 10v.

¹⁷ O 86, Vol. 1, f. 43.

¹⁸ O 85, Vol. 1.

¹⁹ T. Grabarczyk, *Piechota...*, pp. 144-149.

²⁰ A. Bóldyrew, *Arkebuzy w wojsku polskim w pierwszej połowie XVI w. (w świetle rejestrów popisowych piechoty zaciężnej)*, [in:] *In tempore belli et pacis. Ludzie – Miejsca – Przedmioty*.

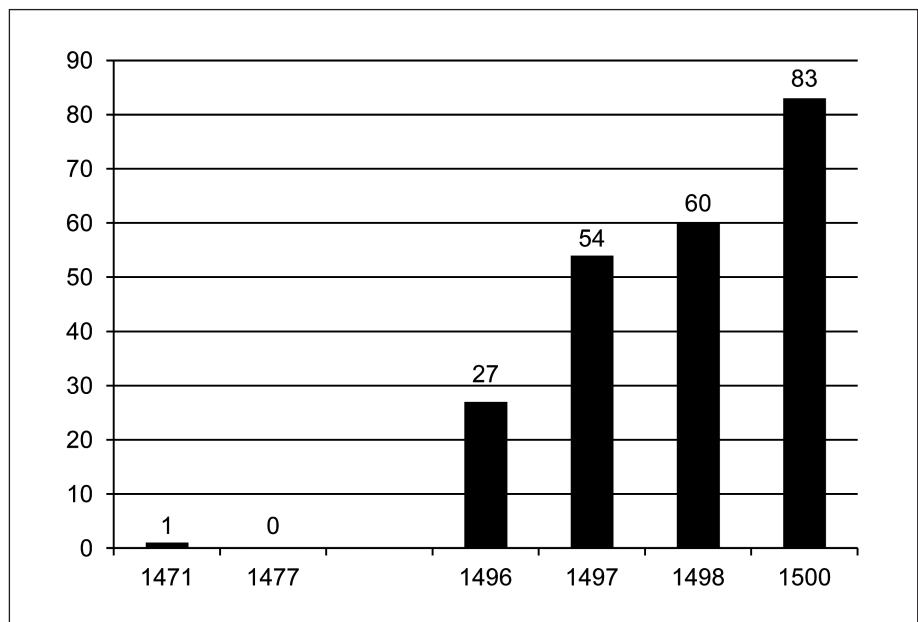


Fig. 2. Increase in the ratio of shooters with firearms in the detachments of Polish mercenary infantry (1471-1500)

possible that firearms completely replaced crossbows already earlier²¹.

In the 1490s, firearms also appeared as part of cavalry's weaponry. The earliest mention of two cavalymen equipped with handgonnes dates back to 1497. They were men-at-arms from the court banner (*curienses*), which was a sort of the royal garde du corps²². As regards mercenary troops, the earliest data on cavalymen equipped with handheld firearms can be found in the register of the detachment of Captain Aleksander Sewer from 1498. The detachment had 75 men, including 45 shooters, with 41 of them being armed with crossbows and 4 with handgonnes²³. From this year there are five more mentions of horsemen from the court banner who were armed with hand-held firearms²⁴.

It is worth noting that horsemen had handgonnes, that is probably the same kind of weapon that was used at that time by infantrymen. Regrettably, no source informs how these horsemen used their handgonnes. Its operation

by a mounted soldier was extremely difficult, if not impossible. It cannot be excluded that these soldiers used their handgonnes while fighting on foot.

Data on numbers and kinds of weapons are not the only ones which can be found in the registers. Of interest are also additional remarks concerning the shooting equipment of mercenaries. On the other hand, such remarks are rather sporadic. Records of this kind can be found in the register of the detachment of Szolc from 1497. It was recorded there that one of the soldiers, Matusz of Zator, did not have the necessary supply of bullets²⁵. There were many more soldiers (15) in this detachment who came to the inspection with no gunpowder²⁶. In the case of the next 5 infantrymen the scribe noted: *nyemyal prochu any kulek* („he had neither gunpowder nor bullets”)²⁷. Two soldiers, Kasper of Wrocław and Paweł of Oświęcim admittedly had hadgonnes, but *zaden yey nyemyal nabycz* („neither of them knew how to charge it”)²⁸. This may have been due to the fact that these shooters purchased their firearms recently and did not manage yet to master the skill of operating them. Such an interpretation is suggested by records concerning 3 crossbowmen who were present in this detachment. In the case of each of them the scribe noted that they had to replace their crossbows with handgonnes fairly soon²⁹. In one of the registers from 1498 one can also find a mention of a handgonne which apparently did not meet the requirements posed for weapons. With regard to that, the soldier was ordered to replace the handgonne with

Księga pamiątkowa dedykowana prof. dr hab. Janowi Szymczakowi w 65-lecie urodzin i 40-lecie pracy naukowo dydaktycznej, eds. T. Grabarczyk, A. Kowalska-Pietrzak, T. Nowak, Warszawa 2011, pp. 542-547; A. Bołdyrew, *Piechota zaciężna w Polsce w pierwszej połowie XVI wieku*, Warszawa 2011, pp. 222-228.

²¹ K. Górski says that it took place as early as 1522, idem, *Historia artylerii*, Kraków 1902, p. 51. This opinion can be accepted, bearing in mind the fact that according to a register of wagons with food supplies from 1521, there was only 1 crossbow as opposed to 71 items of firearms, J. Szymczak, *The Arms and Armour of the Municipal War Wagon Escort in 1521*, „Fasciculi Archaeologiae Historicae”, Vol. XII (2000), pp. 27-31.

²² O 85, Vol. 2, f. 115; T. Grabarczyk, *Początki ręcznej broni palnej na wyposażeniu jazdy polskiej w końcu XV wieku*, „Mars” 2002, No. 12, p. 6.

²³ ASK 85, Vol. 3, f. 6v, 7v, 8v. T. Grabarczyk, *Uzbrojenie w rocie konnej Aleksandra Sewera z 1498 r.*, „Archeologia Historica”, Vol. 34 (2009), pp. 445-452.

²⁴ T. Grabarczyk, *Początki...*, pp. 5-6.

²⁵ O 85, Vol. 2, f. 110.

²⁶ O 85, Vol. 2, f. 109v-112.

²⁷ O 85, vol. 2, f. 109-109v.

²⁸ O 85, Vol. 2, f. 109v, 111; K. Górski, (*Historia piechoty...*, pp. 206, 208) erroneously read it as: *nie miał czem nabić* (*had nothing to charge the handgonne with*).

²⁹ O 85, Vol. 2, f. 110.

another one (*ma yną ruczynycze ukazacz* – „he has to present another handgunne”)³⁰.

Worth noting are remarks in the lists of weaponry lost by mercenaries in 1497. 42 crossbows and 7 handgounnes were mentioned among weaponry lost by soldiers from the detachment of Maciej Polak. Infantrymen of Captain Hubaty lost 21 crossbows and 3 handgounnes, while mercenaries from the detachment of Luboszwarski – 20 crossbows and 4 handgounnes³¹. Proportions between the number of lost crossbows and handgounnes are very significant. More shooters were equipped with handgounnes than with crossbows in 1497; however, the number of lost crossbows was higher. This can mean that handgounnes were less prone to damage than crossbows.

When one compares the data on firearms from the registers from 1471 and 1477 with those referring to the period of 1496-1500, a very high increase in the use of firearms can be seen (see Graph). One is tempted to say that within the period of twenty years a true revolution took place with regard to the numbers and the role of hand-held firearms in infantry detachments. While in the 1470s their numbers were rather marginal, at the end of the 15th c. they were in the equipment of more than 80% of shooters and they clearly outdistanced crossbows³².

The low popularity of firearms in the 1470s cannot be explained by their high prices, as these were the following: hackbuts – 41-45 Groschen for one item, lighter firearms, *piszczel* guns – 24-48 Groschen³³. For the price of 1 Grosch one could purchase 7-8 iron bullets for hackbuts. Prices of crossbows were usually within the range of 48-60 Groschen³⁴, and the price of missiles for crossbows oscillated between 7 and 24 Groschen for one three-score (60)³⁵. Furthermore, in the territory of the Kingdom of Poland there were enough craftsmen manufacturing this kind of weapons³⁶. The increase in popularity of firearms is often explained with its high impact on the morale of the adversary³⁷. Although this factor may have played a certain

role, its significance should by no means be exaggerated. The roar of firearms could also considerably impress the enemy's infantry, but only provided that these were detachments composed of inexperienced soldiers. Battle-experienced men would not have been scared by the mere noise of shots, if it had not been related to any real danger. Horses could be more prone to the noise of shots, but they could also be trained not to react with panic to it. It seems improbable that the vast majority of shooters would have re-equipped themselves with weapons whose main advantage would have been to scare the enemy with the roar of shots.

The actual reason for the increase in popularity of hand-held firearms was the change of their construction. *Piszczel* guns and hackbuts, used by infantrymen in the 1470s, were rather primitive weapons, which were complicated in operation and whose accuracy was low due to their short barrels. Handgounnes were provided with matchlocks, which facilitated the operating of the weapon and the aiming. Barrels, which were longer than in the case of earlier specimens, improved the accuracy and the range of fire. Present day experiments have demonstrated that the rate of fire of handgounnes is lower than of bows or crossbows, but in the case of short-distance fire the missile hit with a greater impact and penetrated the plate armour more easily³⁸. Furthermore, injuries inflicted on the adversary or the horse by a shot – even if it did not prove lethal – were more serious than in the case of a wound inflicted by a crossbow missile. As a result, the damage in the enemy's ranks was more considerable when the fire was conducted with handgounnes than with crossbows. This was more significant for the soldiers than the fact that crossbows surpassed handgounnes with their rate of fire. An additional advantage of handgounnes was their greater resistance to damage, which is pointed out by data in the lists of weaponry which was lost by mercenaries. Differences between firearms in the 1470s and those from the 1490s were so prominent that soldiers decided that it would pay off to abandon crossbows in favour of handgounnes.

³⁰ O 85, Vol. 3, f. 75v.

³¹ O 85, Vol. 3, f. 110-110v.

³² See J. Szymczak, *Od samostrzelników do grzebieniarzy w Krakowie, czyli rzecz o zmierzchu znaczenia kuszy na przełomie XV i XVI wieku*, [in:] *Aetas media, aetas moderna. Studia ofiarowane profesorowi Henrykowi Samsonowiczowi w siedemdziesiątą rocznicę urodzin*, eds. A. Bartoszewicz, H. Manikowska, W. Fałkowski, Warszawa 2000, pp. 122-128

³³ *Ibid.*, p. 297.

³⁴ J. Szymczak, *Produkcja i koszty uzbrojenia rycerskiego w Polsce XIII-XV w.*, Łódź 1989, p. 85.

³⁵ *Ibid.*, pp. 88-89.

³⁶ J. Szymczak, *Początki broni palnej w Polsce (1383-1533)*, Łódź 2004, pp. 78-96.

³⁷ This opinion is frequently repeated both in older and in recent scholarship. See: O. Laskowski, *Piechota*, [in:] *Encyklopedia wojskowa*, Vol. VI, Warszawa 1937, p. 342; J. Wimmer, *Historia piechoty polskiej do 1864 r.*, Warszawa 1978, p. 91; M. Plewczyński, *W służbie polskiego króla. Z zagadnień struktury narodowościowej Armii Koronnej w latach 1500-1574*, Siedlce 1995, p. 119.

³⁸ M. Keen, *Guns, gunpowder, and permanent armies*, [in:] *Medieval Warfare. A History*, ed. M. Keen, New York 1999, p. 280; R.D. Smith, *Handguns*, [in:] *The Oxford Encyclopedia of Medieval Warfare and Military Technology*, Vol. 2, ed. C.J. Rogers, New York 2010, p. 236; Z. Stefańska, *Arkebuz, hakownica i muszkiet. Artykuł dyskusyjny*, „Muzealnictwo Wojskowe”, Vol. 4 (1989), p. 216.

FIREARMS IN THE EQUIPMENT OF MERCENARY TROOPS OF THE KINGDOM OF POLAND IN 1471-1500

Year	Commander	Number of soldiers in the detachment	Number of shooters in the detachment	Number of soldiers with firearms		
				<i>piszczel</i> guns	hackbutts	handgonnes
1471*	Bartosz	86	61	–	3	–
	Grot and Matysz	173	139	–	1	–
	Jan Machno	88	52	–	1	–
	Łojek	89	74	–	1	–
	Marek	447	357	3	5	–
	Wacław	216	152	1	–	–
	Władysław	266	199	–	1	–
1496	Albert Kania	174	150	–	–	39
	Irzyk Hubaty	169	142	–	–	34
	Jan Kałusz	171	145	–	–	34
	Łukasz Luboszwarski	164	130	–	–	39
	Maciej Polak	128	106	–	–	25
	Piotr Hynek	181	153	–	–	59
1497	Albert Kania	168	138	–	–	75
	Hanusz Szolc	148	102	–	–	99
	Jan Kałusz	162	130	–	–	73
	Jan Zaleski	82	35	–	–	31
	Kuropłoch	17	12	–	–	2
	Kusy	17	9	–	–	6
	Łukasz Luboszwarski	169	134	–	–	77
	Tworzyjan	21	19	–	–	8
Wrona	33	24	–	–	18	
1498	Ambroży Brzeski	89	67	–	–	67
	Florian and Jan	89	73	–	–	46
	Irzyk Chomutowski	86	66	–	–	21
	Irzyk Hubaty	184	142	–	–	62
	Irzyk Mundry	24	23	–	–	23
	Jakub Rożnowski	242	192	–	–	138
	Jan Zaleski	82	59	–	–	37
	Kolencz	182	152	–	–	82
	Maciej Polak	172	139	–	–	80
	Marcisz Letowski	87	66	–	–	35
	Matysz Morawczyk	149	116	–	–	72
	Samson	14	12	–	–	12
	Skąpa	130	105	–	–	24
	Sokołowski	87	65	–	–	22
	Sokół Słowacki	87	68	–	–	17
Starniszcz	72	56	–	–	35	
1500	Albert Kania	166	129	–	–	104
	Jan Kałusz	178	141	–	–	125
	Łukasz Luboszwarski	171	135	–	–	107

Tab. 1. Hand-held firearms in the armament of Polish mercenary infantry.

* for 1471, only these detachment where firearms were present were included in the table.

Streszczenie**Broń palna na wyposażeniu wojsk zaciężnych Królestwa Polskiego w latach 1471-1500**

Rejestry wojsk zaciężnych z lat 1471, 1474, 1477, 1496-1498, 1500 są cennym źródłem do poznania ich organizacji i uzbrojenia. Jeśli chodzi o broń ręczną palną to w oddziałach piechoty z 1471 r. dysponowało nią ok. 1% żołnierzy. W użyciu były wówczas puszczle i hakownice. W rejestrach z lat 90. XV w. jedynym typem broni palnej jest rusznica. Jak wynika z rejestrów, w tym czasie nastąpił wzrost popularności broni palnej, która w coraz większym stopniu wypierała kusze. W 1496 r. już 27% strzelców posiadało broń, w 1497 r. – 54%, 1498 r. – 61%, 1500 r. – 83%. Wzrost liczby strzelców uzbrojonych w ręczną broń

palną wiązać należy z udoskonaleniem jej konstrukcji. Występującą w źródłach nazwę rusznica wiązać należy z bronią z zamkiem lontowym, z drewnianym łożem z uformowaną kolbą, o lufie wyraźnie dłuższej niż w puszczelach czy wczesnych hakownicach. Taką właśnie broń widać na rysunku zamieszczonym na liście rozbójników działających na pograniczu polsko-węgierskim skierowanym do mieszczan Bardiowa (dziś na Słowacji) z 1493 r. Warto zauważyć, że rusznice pojawiają się już w 1497 r. na uzbrojeniu jeźdźców chorągwi nadwornej, a rok później na wyposażeniu zaciężnych w jednej z konnych rot.