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FIREARMS I. HISTORY

FIREARMS in Persia. This article surveys the history and production of various firearms and artillery in Persia from their introduction to the 19th century.

i. HISTORY

The generic word used in Persian for a gun (i.e., an arquebus or harquebus, originally a portable but heavy matchlock gun fired from a support) was *tofak*. The original meaning of *tofak* was a hollow wooden tube used to hunt small birds by blowing pellets through it. The word *tof*, "spit," is onomatopoeic, denoting the sound of forceful blowing through a tube (Kasrawī, p. 434; Ḏokāʾ, 1967, pp. 281-82). From the 16th century onwards the term usually appears as *tofang* in the sources.

The Early Period. While the traditional belief that firearms were first introduced to Persia under Shah ʿAbbās I was discredited long ago (Savory, 1967, pp. 73-81; idem, *EI2* I, p. 1066), the exact date when they were first used remains uncertain. Terms hinting at firearms such as *raʿd-andāz* (thunder-thrower) and *qara buḡrā* (Turk. "black camel") occur in late 14th-century Timurid chronicles, but it is unclear whether these connote mangonels

projecting stones and inflammable naphtha or real cannon (Woods, 1992, pp. 98-99). The first incontrovertible use of firearms and of gun-casting dates from the reign of the Aq Qoyunlu ruler Uzun Ḥasan. In 1471, the Venetians sent him matchlocks, siege guns, and other firearms as well as six bombardiers. These, however, never reached Tabrīz, and in 878/1473, Uzun Ḥasan lost the battle of Baškent mainly because of the concentrated firepower of the Ottomans. Nor is it known if the hundred artillery men the Venetians dispatched to Uzun Ḥasan in 1478 ever arrived in Persia (*Travels to Tana*, pp. 15, 78; Don Juan, p. 98; Savory, *EI2* I, p. 1067; Woods 1976, p. 128; idem, 1992, p. 98).

The Safavid period: Shah Esmāʿīl I (q.v.) showed an interest in the purchase of firearms as early as 907/1502, soon after his enthronement (Scarcia Amoretti, pp. 9-10). Yet the Safavid army's failure to use artillery in the battle of Čālderān (q.v.) in 920/1514 was largely responsible for its defeat. Shah Esmāʿīl reacted swiftly to remedy this and immediately following the battle appointed his *wakīl*, Soltān-Ḥosayn, as *tofangčī-bāšī,* commander of the musketeers, putting him in charge of forming of a corps of *tofangčī*s (Bacqué-Grammont, p. 165; Aubin, p. 118). The results were soon noticeable. The Portuguese envoys visiting Kāšān in 1515-16 observed "forty musketeers bearing muskets of metal" among the welcoming party (Smith, p. 44). By 1517, Esmāʿīl's army is said to have included 8,000 musketeers, and Venetian reports from 1521 and 1522 speak of 12,000 and 15,000 to 20,000 arquebusiers (Scarcia Amoretti, pp. 377, 405-6, 533, 545). No figures are available for Shah Ṭahmāsb I's reign, yet it is clear that the musketeer corps continued to be active, frequently taking part in campaigns and in the defense of fortresses (*ʿĀlamārā-ye Šāh Ṭahmāsb*, pp. 64, 78, 123, 157, 181, 193, 204-5, 272, 280, 297, 314, 329, 332, 335, 341, 357, 369, 376-77). By the mid-17th century, observers put the number of musketeers in the Safavid army at 8,000 to 10,000 (Tavernier, I, p. 659) to 12,000 men (Chardin, V, p. 305; Tavernier noted that in times of need, their number could rise to 50,000).

Two types of guns were used by the Safavids: the matchlock (*fatīla*) and the fire-flint (*čaḵmāq*). The matchlocks were not equipped with rifling (*ḵān*) and muzzle (*sar-por*), so the pellets they used had to be inserted with a ramrod (*sonba*). The fire-flint was fired by striking a flint against the steel thus producing a spark that ignited the gun powder by way of a cotton wad (Ḏokāʾ, 1971, p. 204).

In the late 1500s, the Persian arquebus was said to be six spans long and to fire balls less than three ounces in weight (*Travels to Tana*, p. 227). The Persian

arquebus was described as longer and thinner than its European equivalent (Herbert, p. 242). The 600 strong *jazāʾerī* corps, established in 1654 as Shah ʿAbbās II's bodyguard, was equipped with the *jazāʾel,* a musket so heavy that it could not be fired from the shoulder and was equipped with its own tripod. For greater precision, the Persians also fired regular muskets from a pivoting wooden stand (Chardin, V, pp. 310-11, 320-21).

As for cannon, various terms occur in the Safavid sources. The general term was *tūp*. The term *żarbazan* which occasionally occurs in the sources seems to refer to a light field cannon (Adle, 1976, pp. 346, 546). The largest cannon in the Safavid arsenal seems to have been the *kalla-gūš* which fired balls of 15 *mann*s each and which was effective in destroying the walls of Tabrīz during the siege of 1585 (Wāla Eṣfahānī, p. 739). Don Juan, who witnessed the siege, confirms its use by speaking of "two immense siege guns□of so huge a caliber as never before had been seen in Persia," adding that these "cannon were of such size that the bore of each at the mouth spanned a yard across, the length of the barrel being five yards" (Don Juan, pp. 188-9). Jürgen Andersen, a European observer of the siege of Qandahār in 1648 who served as a gunner himself, attests to the enormous size of the ordnance, claiming that in Mašhad he observed the biggest cannon balls he had ever seen, weighing 64 and 90 lbs. (Andersen, p. 155). The *qalʿakūb*, "fortress pounder" (Eskandar Beg, p. 522) obviously refers to a large cannon as well, though the difference from the *kalla-gūš* is not clear. The *bādalīj* (Ḥasan Rūmlū, ed. Navāʾī, II, 230; Eskandar Beg, pp. 72, 83, 644, 646, 747, 714, 903, 904, 973, 982; Monajjem Yazdī, p. 269), and *bālyemez* were probably similar. They were not identical, however, for Mollā Jalāl-al-Dīn Moḥammad Monajjem Yazdī mentions the *bālyemez* and the *bādalīj* separately, distinguishing both from the regular *tūp* (pp. 255, 265, 320, 402). The *bālyemez*, a Turkish word which is a corruption of the German *Faule Metze* (Kissling, pp. 330-40), was a large cannon, firing cannon-balls that weighed 10-12 *mann-e tabrīzī* (ca. 60-72 lb.; Šāmlū, I, p. 258, where *bāl namīr* must be a misspelling for *bālyemez*). The term *tūp-e farangī* (Ḥasan Rūmlū, ed. Navāʿī, II, pp. 207-8; *tofang-e farangī* in Eskandar Beg, p. 656) obviously refers to a cannon of European style or import. Cannons were typically mounted on wheeled carriages, *arāba* (e.g., *Bābor-nāma*, tr. Beveridge, p. 622).

A special type of firearm first mentioned in Safavid times was the swivel gun, the so-called *zanbūrak* (little bee), usually mounted on the back of a camel (Plate I). *Zanbūrak*s were often fired from a kneeling camel, but could be employed from a trotting one as well (Dupré, II, p. 297). The origins of the

zanbūrak tend to be ascribed to the Afghans, though the fact that the invading Afghans made use of the weapon (Gilanentz, p. 7) is no proof of this. The first eyewitness accounts by foreigners of its use date from the late Safavid period, but the weapon may have been in use already in the early 16th century (Scarcia Amoretti, p. 546, where *falconetti* are mentioned as being placed on carts). It is first recorded in a Persian source dating from the reign of Shah ʿAbbās I (Monajjem Yazdī, p. 407). The *zanbūrak* had a place in the Uzbek army as well, and in 1670 was said to be the only available artillery in their arsenal (Burton, p. 297). The Dorrani rulers of Afghanistan in the 18th century continued to rely on this form of warfare, employing *zanbūrak*s in great number against the Indian Marathas in the battle of Panipat in 1761 (Gommans, p. 277). Not needing a carriage and hence flexible and mobile, the *zanbūrak* was a perfect example of imported technology adapted to local circumstances. Like other types of cannon, the *zanbūrak* was used to salute visiting envoys (Bushev, p. 46).

The Safavids quickly took to firearms, which were used not only in battle but also to protect long-distance travelers from brigands. Caravans were often accompanied by armed soldiers, who sometimes numbered up to 1,000 (Florencio, III, p. 57; Bushev, 61-62). The Persians adapted the heavy arquebus to their own needs and Safavid gunsmiths became adept at manufacturing light and elegant rifles with ivory-inlaid stocks and damascened barrels that were used for hunting rather than warfare (Zigulsky, pp. 444-45). As early as the 16th century, firearms were frequently depicted in Persian miniatures (Zigulsky, p. 445; Stchoukine, pl. I, XI; Falsafī, I, p. 159, II, p. 329; Plate II) . The presence of sulfur, needed to make gunpowder, made a firearm industry possible in Azarbaijan in Safavid times. There was also manufacturing in Shemakha in Šīrvān (Geidarov, p. 80-2). In Tbilisi gunpowder was readily available, using sulfur from Ganja and nitrate from the surrounding mountains (Pitton de Tournefort, p. 319). Saltpeter and sulfur were also found near Naṭanz in central Persia (Richard, II, p. 335). By the mid-17th century firearms were even celebrated in poetry (Naṣrābādī, pp. 40, 65). Numerous examples show, moreover, that successive shahs continued to be keen on acquiring European military technology. The major European powers never joined Persia in a grand anti-Ottoman league, but they did, at various times, send firearms and ammunition to the Safavids. Philip II of Spain dispatched firearms to Persia between 1578 and 1590 (Palombini, p. 109). Shah ʿAbbās actively solicited firearms from European countries. He had embassies returning from Venice and Russia bring back firearms (Bushev, pp. 310, 347,

360; Berchet, p. 65); he sought to acquire guns from the Duke of Tuscany and the Pope (Tucci, p. 156) and from Portugal in 1612 (Alonso, p. 155); and he requested and received guns from England in 1618 and again in 1621 (Sainsbury, p. 152; Gilanentz, I, p. 255). In the same period he had hoped to acquire muskets of greater range and fire power than his army possessed (Della Valle, I, p. 666). Later shahs and government officials continued to have an interest in the acquisition and use of firearms. ʿAbbās II's grand vizier, Moḥammad Beg, for instance, had a keen interest in the arquebus (Tavernier, I, pp. 631-2; Poullet, II, p. 217). European military experts were also in demand. Even Shah Solaymān, not usually noted for his military concerns, requested European military experts (Fekete, pp. 529-33; Algemeen Rijksarchief, VOC 1501, fol. 706).

Though firearms became widespread, their introduction into the Persian army did not follow a smooth path. Several factors impeded a quick and comprehensive assimilation into the Safavid army. Firearms did not fit in with the traditional ways of fighting and radically altered the form of combat which had always been individual and personal, producing "anonymous death" (Subrahmaniyam, p. 228). Mounted soldiers deemed the use of firearms beneath their dignity (Cartwright, p. 503). The *tofangčī*s, recruited from peasants and artisans, were therefore held in low esteem and regarded as cannon fodder (Sherley, p. 163; Chardin, V, p. 304-6; Kaempfer, p. 94, Richard, II, pp. 117, 265, 285). Ultimately, the use of firearms was ill suited to the type of swift and flexible manoeuvering and surprise raids typical of the Safavid cavalry tradition. Heavy matchlock guns, for one, could not be applied from horseback (Matthee, pp. 393-94).

Artillery was the weaponry which was the most difficult to integrate into the army. The Safavids used artillery from the beginning (Scarcia Amoretti, p. 125, Wāla Eṣfahānī, p. 216), in part because their archenemies, the Ottomans, employed it against them. Occasionally they captured artillery during battle (Scarcia Amoretti, p. 340), but they used little or no field artillery (Kaempfer, pp. 95, 97). Notable exceptions were the battle of Jām, which pitted the Safavids against the Uzbeks in 936/1529 (Eskandar Beg, p. 53), and the battle in which Shah ʿAbbās I fought the same opponents in 1010-11/1602, when the Shah is said to have had 300 carriages with cannons and *żarbazan*s at his disposal (Eskandar Beg, p. 619). A lack of artillery, on the other hand, is claimed to have prevented Shah ʿAbbās from engaging in full combat against his Ottoman opponents (Figueroa, II, p. 333). The rough terrain of most of

Persia and the absence of navigable rivers certainly militated against the easy transportation of heavy artillery pieces. As a result, available artillery was rarely moved, so as not to impede the speed of the army (Della Valle, II, p. 71), and cannons were often cast at the site of an impending or ongoing siege (Andersen, p. 155).

Some 16th-century foreign sources incorrectly claim that the Safavids had no siege artillery (Dernschwam, pp. 148, 210-11; Berchet, p. 290; Vechietti, p. 318). In fact, artillery had been used since the days of the Aq Qoyunlu (*Travels to Tana*, II, p. 153), and it was most frequently applied to siege operations, usually to attack fortresses, often successfully, as in the attack on Bost or the seizure of Qandahār in 1648 (Andersen, p. 159; Šāmlū, I, p. 352). Generally it was not so much bombardments as the undermining of walls with bombs and grenades that was decisive for the crumbling of walls and the success of a siege. Contrary to Du Mans' claim (Richard, II, p. 119), the Safavids used bombs and hand grenades (*ḵompāra*). The latter were made of a clay pear-shaped jar with a hole and a fuse (Ḏokāʾ, 1971, p. 206). Rockets (*mūšak*) were used as well. Defensive artillery also existed, but the effectiveness of cannon installed on top of city walls and towers constructed with traditional building materials, sun-dried brick and mud, must have been limited (Shepherd, p. 135), and in many cases these pieces were used to fire ceremonial salvos for arriving or departing dignitaries (Valentijn, V, p. 267). In fact, firearms in general were regularly used for saluting visiting dignitaries or the arrival of a new khan (Monajjem Yazdī, p. 442; Bushev, p. 46). It is not surprising that the *tūpčī-bāšī* did not figure among the most prestigious military offices, that his work load was light (Tavernier, I, p. 660; Kaempfer, p. 95), and that the position was even abolished for a brief period in the mid-17th century.

Various European accounts state that Persian firearms were less sophisticated than European ones or that in their use of firearms the Persians were inferior to the Ottomans. Though later reports are somewhat contradictory in that several sources, European as well as Persian, claim that the skill of the Persians in using the arquebus was unsurpassed (Gilanentz, I, p. 53; Herbert, p. 235; Eskandar Beg, tr. Savory, p. 1121), others continued to argue or imply that the cavalry barely used arquebus (Berchet, p. 290), and that the Persians trailed the Ottomans in using as well as in manufacturing firearms (Della Valle, I, p. 666, II, p. 323; Chardin, IV, pp. 137-38). It is true to say that until the end of the dynasty the Safavids were very much dependent on outside ordnance and expertise in the form of gunners, who were often European

mercenaries and renegades or Ottoman deserters (Berchet, p. 25-26; Scarcia Amoretti, pp. 405-6, 451, 469-70, 481, 546, 533-34; Tucci, pp. 154, 156; Cartwright, p. 503; Herbert, p. 235). A French master gunner led the Persian artillery during the battle of Golnābād in 1722. Another served as the master gunner of Isfahan during the ensuing siege of the city (Krusinski, p. 230; Lockhart 1958, pp. 135, 155). Successive shahs also requested European gunners and at various times these are said to have assisted the Persian army (Šāmlū, I, p. 352; Andersen, p. 147; Foster 1913, pp. 211, 217; Gilanentz, I, p. 496; Riazul Islam, I, p. 328; Fekete, doc. 96). Chardin was wrong in stating that the Persians did not have foundries (Chardin, IV, p. 91). Yet the Safavids do seem to have had difficulty casting cannon properly and to have suffered from a lack of parts and ammunition. In 1585, during the siege of Tabrīz, Persian cannon casters had problems getting the mold right and took a long time completing the process of casting cannon (Eskandar Beg, tr. Savory, pp. 452-53). During the capture of Bahrain in 1603, Portuguese cannons fell into Safavid hands, but experts were unable to manufacture balls of the enormous size used by these weapons (Monajjem Yazdī, p. 332). During the Erzurum campaign of 1019/1610 it took the Safavid army forty days to cast three large cannons and one *bālyemez* (Monajjem Yazdī, p. 402). When the Russians moved against Darband in 1720, some Persian soldiers were armed with flintlock guns, but these did not have a flint and had to be fired with a fuse. A shortage of ammunition, moreover, limited the effectiveness of the Safavid artillery at times (Soimonov, in Müller, VII, p. 327).

Like the Ottoman state, the Safavid central state made attempts to monopolize the use of firearms or at least to restrict their spread among the general populace. Under the Aq Qoyunlu, the sultan’s personal forces may have been the only ones with permission to use firearms (Woods, 1976, p. 8). Under Shah ʿAbbās I, the people of Lār were banned from carrying arms (Bernardino, p. 145; Rebello, p. 109). After Māzandarān was annexed to the Safavid state in the 1590s, its inhabitants were forced to give up their arms (Marʿašī, p. 347). Just as the Ottomans monopolized the manufacture and import of firearms (Inalcik, pp. 195-96), so the Safavids banned the export of sulfur (London, India Office Records E/3/6/ fol. 9). The Safavids also managed for some time to retain the upper hand against the nomadic peoples outside their borders, many of whom had only limited access to firearms until the 17th century. While those on the western frontiers had earlier access, probably due to the proximity of the Ottoman empire, those beyond Khorasan were long without firepower. The Uzbeks first encountered artillery during the battle of Jām (935/1528), in which

they were defeated by the Safavids, who on this occasion did use concentrated firepower in the form of cannon on carriages strung together in a corral (Dickson, pp. 129, 133). A century later, the Uzbeks still fought mostly with swords and bows and arrows, in part because firearms were not to their liking and did not fit their nomadic type of warfare. They thus acted in a way similar to the Safavids who were also, as we have seen, reluctant to integrate firearms into their arsenal (Della Valle, I, p. 625). The Uzbeks seem to have had access only to guns of inferior quality. The khans of Khiva and Bukhara repeatedly tried to get permission from the czar of Moscow to purchase arms, including firearms, but only rarely received such permission (Heller, p. 38). Baluchis did have firearms in the late 17th century and were even considered "good shots" (Kroell, p. 65). Yet at least one Persian source recounts how in 1105-6/1694-95 invading Baluchis armed with bows and arrows were easily defeated by a Safavid army equipped with guns (Nasīrī, pp. 70-71). The invading Afghans, too, used firearms. Neither Baluchis nor Afghans, however, seem to have been as skillful as the Persians in using them, and firearms were not decisive in the fall of Isfahan (Matthee, p. 408). By the late Safavid period, however, firearms had spread not just to the periphery but also to the common people. Peasants at that time were said to be equipped with snaphances (Valentijn, V, p. 274).

Nāder Shah and the Zand period. Nāder Shah reversed the decline of the army that had begun under the later Safavids. His army used a variety of firearms, such as mortars, *ḵompāra*, pistols, *tapānča*, *żarbzan*, cannon, *bādlīj*, and *ṣaff-pūzan* ("line breaker"; Marvī, 131, 280, 292, 563, 953). Nāder Shah successfully employed the *zanbūrak*. It is said that 1,700 camels equipped with *zanbūrak*s participated in a military parade in 1152/1739-40 (Marvī, p. 490). He won the battle of Mehmāndūst against the Afghans in 1729 largely because of superior firepower. It is likely though not certain that Nāder relied on European gunners during the battle (Lockhart 1938, p. 36; Adle, 1973, p. 239). By 1741, the number of cannons cast in Isfahan, combined with those that had been taken from India, reached five thousand. Still, the continually slow penetration of firearms into the Persian army is illustrated by Jonas Hanway's (q.v.) description of Nāder's regular forces. While most carried musket and sabre, the Uzbek contingents and several others were equipped with spears, battle axes, bows and arrows, and some had a single pistol (Hanway, I, pp. 252-53). Nāder, the swiftness of whose campaigns militated against proper preparations for city sieges, also suffered from a lack of adequate siege artillery. As a result he failed to take Baghdad, Mosul, Kars (Qārs),á and Basra between 1733 and 1743 (Lockhart 1938, pp. 67-68, 90-91, 119-20, 230-32, 236,

267-68; Olson, pp. 173-74).

In Karīm Khan Zand's army the *wakīl*'s personal body guard was usually armed with flintlocks, but most other musketeers were still equipped with matchlocks (Perry, p. 280). As late as the 1790s, the matchlock was said to be the common weapon of Persian foot-soldiers, except in Azarbaijan and some parts of Šīrvān and Dāḡestān, where the use of the springlock musket had been adopted from the Turks (Forster, II, p. 152). One foreign observer regarded the Persian artillery under the Zands as more for show than for destruction (Ferrières-Sauveboeuf, II, p. 69). Cities continued to be subdued mostly through starvation and the undermining of walls rather than with artillery, which was usually hardly available (Roschanzamir, pp. 200-201).

The Qajar period. Persia remained relatively backward in the possession and use of firearms and artillery in the early phase of Qajar rule. Soldiers continued to have to provide for their own rifles. As for artillery, aside from *zanbūrak*s, the country possessed little more than the pieces that had been taken from the Portuguese in 1622 and from the Russians during the wars of the 18th century. Around 1800 the artillery corps consisted of some 840 men and most of the cannoneers were Georgians. The shah also employed some 1500 *zanbūrakčī*s at this point (Dupré, II, 295-97). However, the *zanbūrak* by that time had become "insignificant and outmoded" (Drouville, II, p. 138-39), and the *zanbūrak* regiment was (temporarily) abolished by Fatḥ-ʿAlī Shah at the instigation of European military advisers (Thornton, p. 14).

The first significant attempt at modern military reform, including the introduction of modern firearms, occurred at the instigation of the crown prince ʿAbbās Mīrzā (q.v.) and took the form of a French military mission led by General Claude-Mathieu de Gardane (q.v.) in 1807-9. As part of the mission France agreed to sell 20,000 muskets to Persia. French artillery experts accompanied General Gardane to Persia in 1807 and established a cannon foundry in Isfahan (Tancoigne, p. 251). Persian soldiers were trained in western methods, but a Franco-Russian rapprochement, reflected in the 1807 Treaty of Tilsit, prevented continuity in training and arms deliveries. Adrien Dupré and Major Gaspard Drouville derided the improvements that had been introduced by the Gardane mission, complaining about the quality of the cannon mounts, the metals used for the balls (which were likely to explode with each firing), and their small caliber (Dupré, II, 296-97; Drouville, II, pp. 140-44; see also Tancoigne, pp. 249-51).

The souring of Franco-Persian relations opened the way for British military assistance to Persia. Sir Harford Jones, visiting the country as Britain's envoy in 1809, promised "a subsidy with warlike ammunition, such as guns, muskets, etc." as well as the assistance of British officers (Wright, 1977, p. 7). The Jones mission and subsequent ones by Sir John Malcolm and Sir Gore Ouseley were soon followed by the sending of a contingent of British artillery experts led by Major Joseph D'Arcy, and by the establishment of an arsenal with a foundry in Tabrīz, Azarbaijan being the province where most of the new armed forces were concentrated. By 1812, the British had provided Persia with some 16,000 muskets and 20 cannons (Atkin, p. 135). Drouville insisted that since the Persians had received English assistance their artillery now matched that of many European countries (Drouville, II, p. 138-39). British artillery was crucial in the battle the Persians fought against the Russians near Solṭānābād in 1812 (Wright, 1977, p. 52). Yet the new hardware proved unable to sustain Persian victories, for in the battle of Aslāndūz later in the year, the Qajar army was outdone by the much better trained and equipped Russians. After the defeat, Fatḥ-ʿAlī Shah declared that the ancestral lance was still the best defensive weapon (Kotzbue, pp. 160-61).

The only army having anything approaching efficient artillery was indeed that of ʿAbbās Mīrzā, but his arsenal was woefully short on ammunition—James Baillie Fraser estimated that the prince took to the field with no more than twenty to twenty-five rounds for each gun. Among the other troops available from the various provinces, the *tofangčī*s of Astarābād were considered the best of Persia (Fraser, p. 228). The Turkman tribes in Khorasan continued to possess few firearms and were said to be inept in using them (Fraser, pp. 268-69). As late as 1840 most Baḵtīārī tribesmen were still armed with matchlocks (De Bode, II, p. 23).

Kermān was noted for its manufacture of matchlocks in the early 19th century (Pottinger, p. 225). Shiraz at that time is said to have boasted seventeen munitions factories. Saltpeter was brought in from Lār (Dupré, II, p. 11). Yazd was the site of twenty-one factories (Dupré, II, p. 98; Plate III). Qajar rulers nevertheless continued the long-standing Persian policy of purchasing firearms and soliciting artillery experts from Europe. Mīrzā Ṣāleḥ, the first Persian to be sent to Europe for a modern education in the early 1820s, purchased arms, including five thousand muskets, in London for Fatḥ-ʿAlī Shah (Wright, 1985, p. 83). Yet Anglo-Russian rapprochement and Napoleon's defeat at Waterloo had lessened Britain's interest in Persia, and most British

advisors had left Persia by then. An exception was Sir Henry Lindesay-Bethune, who remained in charge of horse artillery and who helped secure the accession of Moḥammad Shah in 1834. Although British-Persian relations were far from harmonious under the latter ruler, who favored the Russians, the British in 1836 still sent a contingent of sergeants of the Rifle Corps led by Captain Richard Wilbraham, preceded by the shipment of two thousand muskets, some howitzers, and half a million flints (Wright, 1977, pp. 57-58). The defeat at Herat in 1838 prompted Moḥammad Shah's grand vizier Ḥājī Mīrzā Āqāsī (q.v.) to engage in military reform which resulted in the establishment of the arsenal of Tehran and the reinstitution of an (improved) *zanbūrak* regiment consisting of two hundred units (Thornton, pp. 12, 14). It also led the Persians to approach the French again. An agreement concluded with France in 1839 included the sending of French experts. Mīrzā Ḥosayn Khan Ājūdān-bāšī in 1839 bought four thousand guns in Paris for Moḥammad Shah, and in 1844 the Shah sent Richard Khan to France to buy weapons (Nāṭeq, pp. 214-15, 246). All these missions were fruitless, mainly because of British opposition (Farnoud, p. 245).

The next wave of military reforms occurred under Amīr(-e) Kabīr (q.v.). In 1851-52 arsenals were established in Isfahan, Mašhad, Shiraz and Qazvīn, where rifles were produced and gunpowder manufactured (Moʿtažed, p. 293). Amīr Kabīr's demise did not spell the end of further developments. A contract of 1858 again included the sending of French military specialists. The newly established Dar al-fonūn (q.v) had a department of military sciences, where artillery skills were taught. One of the teachers, Nicolas, a member of the French delegation, wrote what is probably the first Persian treatise on artillery, assisted by Moṣṭafāqolī Khan (MSS Tehran, Ketāb-ḵāna-ye mellī, nos. 6629, 6632; see Farnoud, p. 257). At the same time a French officer named Rous was commissioned to manufacture 20,000 rifles over two years. However, he soon became embroiled in a dispute with the Persian government about quality and price (Farnoud, pp. 260-65; Gobineau, pp. 203-4). The infantry in the south, recruited from among the nomads, was mostly armed with domestically made firearms, which continued to be manufactured in Lār. The mid-19th century domestic production was said to be capable of manufacturing all the arms needed by the Persian army. However, in the 1860s the better firearms, percussion muskets, were still said to come from Europe, mostly from England, as well as from Belgium (Rochechouart, p. 67).

In the second half of the 19th century, the Qajar army, weakened by the fact

that high positions were offered to the highest bidder and that those in charge viewed the military as little more than an avenue for personal gain, remained substandard in equipment and training. Traditional match and flint locks continued to be ubiquitous (Shepherd, pp. 137-38; Gillard, p. 201). Austria became the main source of firearms used in Persia following Nāṣer al-Dīn Shah's visit to Vienna in 1878. Cannon, including pieces for the *zanbūrak* arsenal, were ordered as well as 26,000 Werndl backloaders. Additional orders in the next decade made the Werndl the main rifle in the Persian army (Slaby, p. 148, 178, 197). Many of these were, however, privately sold by soldiers. Nāṣer al-Dīn's royal camp in 1883 was said to consist of 2,000 infantry soldiers, 1,300 cavalry, 300 musketeers, 200 gunners with ten pieces of artillery, and 150 gunners on camel-back with twenty pieces of "small, and bad artillery" (Piemontese, p. 165). Austrians also became involved in the training and reorganization of the Persian army, attempting to reorganize the arsenal from an institution run for private gain into a professional one (Slaby, p. 164). In 1903 many soldiers were still equipped with the percussion musket, by that time an outmoded weapon. Most importantly, the effectiveness of any firearms continued to be sharply reduced by the woeful lack of ammunition, little or none of which was produced inside the country (Tousi, pp. 211-14). This basic problem still confronted Reżā Shah when he set out to construct a new army in the 1920s (Cronin, p. 131).

In these circumstances it is hardly surprising that in the late 19th century the firepower of Persia's tribes, long the only military force of consequence in Persia, was far superior to that of the country's standing army. They possessed more modern weapons and greater numbers of them (Tousi, p. 215). The Baḵtīārī, it was said, possessed 25,000 mounted riders, each equipped with a rifle of recent make (Destrée, p. 352). In the late 1800s, the spread of firearms among the population increased lawlessness and insecurity, especially in the southern regions, which were amply supplied with Martini-Henry and Winchester rifles smuggled in via the Persian Gulf ports (Arnold, pp. 365, 367, 413; Von Oppenheim, II, p. 319). In the 1890s heavily armed tribes from Tangestān frequently closed the Būšeh- to-Shiraz road (Lorimer, *Gazetteer*, I/2, p. 2561).

The arms trade, which had begun in the early 1880s during the SecondAnglo-Afghan War (q.v.), used Būšehr as its main port of entry and was mainly conducted by British merchants. By 1897 more than ć100,000 worth of arms and ammunition was openly imported via Būšehr, almost all of it from Britain

(L. Fraser, pp. 5, 8). The inland center of the trade was Shiraz, where tribesmen came to buy arms in great quantity. Afghan tribes on the Northwestern Frontier were also supplied with arms originating in Muscat that entered Baluchistan via Bandar ʿAbbās and the Makrān coast. The Qajar government tried to put a halt to this development by issuing a decree in 1881, repeated in 1891, declaring the purchase and import of firearms a government monopoly. The British, too, concerned about the arming of the Pathans on the Indian frontier, took measures to curb imports. Difficult terrain, a lack of manpower, corrupt practices of local officials, and tribal opposition made enforcement difficult, however. The official traffic came to an end when the Qajar government entered into an agreement with the governments of Britain and Muscat in 1897 and confiscated many arms. Yet smuggling continued, and though bans on gun running were repeated in 1895 and 1900, no effective solution was found to the problem (Ettehadieh, pp. 177-84) and illegal imports continued, even via Būšehr and Bandar ʿAbbās (Lorimer, *Gazetteer*, I/2, pp. 2571, 2577-78. The smuggling via Baluchistan, in which local chiefs participated, was particularly elusive, because it took place under the shelter of the French and used mostly uninhabited landing spots, and British efforts to stamp it out between 1907 and 1910 were only partly successful (L. Fraser, p. 10; Lorimer, *Gazetteer*, I/2 p. 2580). The illicit arms traffic and armed tribal resistance against the state continued into the reign of Reżā Shah, and it was only in the 1920s that the central government managed to disarm the tribes and establish a monopoly on firearms (Cronin, pp. 131, 137).

BIBLIOGRAPHY

(for cited works not given in detail, see “Short References”):

C. Adle, “La bataille de Mehmândûst (1142/1729),” *Stud. Ir.* 2, 1973, pp. 235-41.

Idem, “Siyaqi-Nezam, Fotuhat-e Homayun: Relation des événements de la Perse et du Turkestan à l’extreme fin du XVI s,” Thèse du 3e Cycle, University of Paris, 1976.

ʿĀlamārā-ye Šāh Ṭahmāsb, ed. Ī. Afšār, Tehran, 1370 Š./1991.

Algemeen Rijksarchief (Dutch National Archives), The Hague. C. Alonso, "Embajadores de Persia en las Cortes de Praga, Roma y Valladolid (1600-1601)," *Anthologica Annua* 36, 1989, pp. 11-271.

J. Andersen and V. Iversen, *Orientalische Reise-Beschreibungen*, ed. D. Lohmeier, Tübingen, 1980.

A. Arnold, *Through Persia by Caravan*, London, 1877, repr. New York, 1977.

M. Atkin, *Russia and Iran: 1780-1828*, Minneapolis, 1980.

J. Aubin, "L'avènement des safavides reconsidéré," *Moyen Orient et Océan Indien* 5, 1988, pp. 1-130.

J.-L. Bacqué-Grammont, *Les Ottomans, les Safavides et leurs voisins: Contribution à l'histoire des relations internationales dans l'Orient islamique de 1514 à 1524*, Istanbul and Leiden, 1987.

G. Berchet, *La repubblica di Venezia e la Persia*, Turin, 1865.

G. de S. Bernardino, *Itinerario da India por terra at a Ilha de Chipre*, ed. A. Reis Machado, Lisbon, 1953.

C. Blair, ed., *Pollard's History of Firearms*, New York, 1983.

A. Burton, *The Bukharans: A Dynastic, Diplomatic and Commercial History 1550-1702*, Richmond, England 1997.

P. P. Bushev, *Istoria posol'stv v diplomaticheskikh otnosheniĭ russkgogo i iranskogo gosudarstv v 1586-1612 gg.* (History of the embassies and diplomatic relations between the governments of Russia and Iran, 1586-1612), Moscow, 1976.

J. Cartwright, "Observations of Master John Cartwright," in S. Purchas, ed., *Hakluytus Posthumnus or Purchas his Pilgrimes* VIII, Glasgow, 1905, pp. 482-522.

F. Colombari, "Les zemboureks: Artillerie de campagne à dromedaire employée dans l'armée persane," *Le Spectateur militaire*, 15 June 1853, pp. 265-96.

Idem., “Observations sur l’armée persane: Artillerie de campagne à dromedaire,” *Le Spectateur militaire,* 15 July 1853, pp. 397-427.

S. Cronin, *The Army and the Creation of the Pahlavi State in Iran: 1910-1926*, London, 1997.

C. A. De Bode, *Travels in Luristan and Arabistan*, 2 vols., London, 1845.

P. Della Valle, *Viaggi di P. della Valle*, 2 vols., Brighton, 1843.

H. Dernschwam, *Tagebuch einer Reise nach Konstantinopel und Kleinasien (1553-55)*, ed. E. Babinger, Munich and Leipzig, 1927.

A. Destrée, *Les fonctionnaires belges au service de la Perse 1898-1915*, Acta Iranica 13, Tehran and Liège, 1976, p. 352.

M. B. Dickson, “Shah Tahmasb and the Uzbeks: The Duel for Khurasan with ʿUbayd Khan, 930-946/1524-1540, Ph.D. diss., Princeton University, 1958.

Y. Ḏokāʾ, “Tofang wa pīšīna-ye ān dar Īrān,” *Barrasīhā-ye tārīḵī* 2/3, 1346 Š./1967, pp. 281-94.

Idem, *Arteš-e šāhanšāhī-e Īrān az Kūroš tā Pahlavī*, Tehran, 1350 Š./1971.

G. Drouville, *Voyage en Perse fait en 1812 et 1813*, 2 vols., St. Petersburg, 1819-20.

A. Dupré, *Voyage en Perse fait dans les années 1807, 1808, 1809*, *en traversant la Natolie* [sic] *et la Mésopotamie,* 2 vols., Paris, 1819.

R. Elgood, *Firearms of the Islamic World in the Tareq Rajab Museum, Kuwait*, London, l995.

M. Ettehadieh, “The Arms Trade in the Persian Gulf, 1880-1898,” inB. Fragner et al., eds., *Proceedings of the Second European Conference of Iranian Studies* Rome, 1995, pp. 176-84.

N. Falsafī, *Zendagānī-e Šāh ʿAbbās-e awwal*, 4th ed., 5 vols. in 3, Tehran, 1369 Š./1990.

M. Farnoud, “Rapports entre l’Iran et l’Europe: Les conseillers européens en Iran au XIXe siècle,” Thèse du 3e Cycle, Université de Picardie, 1982.

L. Fekete, *Einführung in die persische Paläographie: 101 persische Dokumente*, ed. G. Hazai, Budapest, 1977.

L. F. de Ferrières-Sauveboeuf, *Mémoires historiques, politiques, et géographiques des voyages en Turquie, en Perse, et en Arabie depus 1782 jusqu'á 1789*, 2 vols., Paris, 1790.

Don Garcia de Silva y Figueroa, *Comentarios de D. Garcia de Silva y Figueroa de la embajada que de parte del rey de España Don Felipe III hizo al rey Xa Abas de Persia*, 2 vols, Madrid, 1903-5.

P. Fr. Florencio del Nino Jeus, *Biblioteca Carmelitana-Teresiana de Misiones* III: *En Persia*, Pamplona, 1930.

G. Forster, *A Journey from Bengal to England*, 2 vols., London, 1798; repr., New Delhi, 1997.

J. B. Fraser, *Narrative of a Journey into Khorasan in the Years 1821 and 1822*, London, 1825.

L. Fraser, "Gun-Running in the Persian Gulf," *Proceedings of the Central Asian Society*, 1911, pp. 3-16.

M. K. Geidarov, *Remeslennoe proizvodstva v gorodakh Azerbaidzhana v XVII v.*, Baku, 1967.

D. Ghaimmaghami, "Relations militaires franco-iraniennes au XIX siècle," Ph.D. diss., Université de Sorbonne, Paris, 1968.

P. di Sarkis Gilanentz (Petros di Sargis Gilanents'), *Zhamanakagrut'iwn*, tr. C. Minasian as *The Chronicle of P. di S. Gilanentz Concerning the Afghan Invasion of Persia in 1722*, Lisbon, 1959.

D. Gillard, ed., *British Documents on Foreign Affairs*, Pt. I, Ser. B., *The Near and Middle East 1856-1914*, vol. 10, *Persia, 1856-1885*, Frederick, Md., 1985.

Comte de Gobineau, *Les dépêches diplomatiques du Comte de Gobineau en Perse*, ed. A. D. Hytier, Geneva and Paris, 1959, pp. 203-4.

J. Gommans, "Indian Warfare and Afghan Innovation During the Eighteenth Century," *Studies in History* 11/2, N.S., 1995, pp. 261-80.

P. Grolier, “Les zembourecks, artillerie persane,” *Le Moniteur universel* 49, 18 Feb. 1855, pp. 195-96.

J. Hanway, *An Historical Account of the British Trade over the Caspian Sea*, 4 vols., London, 1753.

K. Heller, “Zur Entwicklung der Handelsbeziehungen des moskauer Reiches mit Persien und Mittelasien im 16. und 17. Jahhundert,” *Forschungen zur osteuropäischen Geschichte* 51, 1996, pp. 35-43.

T. Herbert, *Travels in Persia, 1627-1629*, ed. W. Foster, New York, 1929.

H. Inalcik, “The Socio-Political Effects of the Diffusion of Fire-arms in the Middle East,” in V. J. Parry and M. E. Yapp, eds., *War, Technology, and Society in the Middle East*, London, 1975, pp. 195-217.

R. Islam, *A Calendar of Documents on Indo-Persian Relations (1500-1750)*, 2 vols., Tehran and Karachi, 1979-82.

E. Kaempfer, *Am Hofe des persischen Grosskönigs 1684-1685*, Tübingen and Basel, 1977.

A. Kasrawī, “Dar pīramūn-e tofak,” in Y. Ḏokāʾ, ed., *Karvand-e Kasrawī*, Tehran, 1352 Š./1973, pp. 434-37.

H. J. Kissling, “Baljemez,” *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 101, 1951, pp. 333-40.

M. von Kotzbue, *Narrative of a Journey into Persia in the Suite of the Imperial Russian Embassy in the Year 1817*, London, 1819.

A. Kroell, ed., *Nouvelles d’Ispahan 1665-1695*, Paris, 1979.

J. T. Krusinski, *The History of the late Revolutions of Persia,* 2 vols, London, 1728.

G. Le Strange, ed. and tr., *Don Juan of Persia: A Shiʿah Catholic 1560-1604*, London, 1926.

L. Lockhart, *Nadir Shah*, London, 1938.

Idem, *The Fall of the Ṣafavī Dynasty and the Afghan Occupation of Persia*,

Cambridge, 1958.

Idem, "The Persian Army in the Safavid Period," *Der Islam* 24, 1959, pp. 89-98.

Mīr Tīmūr Marʿašī, *Tārīḵ-e ḵāndān-e Marʿašī-e Māzandarān*, ed. M. Sotūda, Tehran, 1364 Š./1985.

Moḥammad-Kāẓem Marvī, *ʿAlamārā-ye nāderī*, ed. M.-A. Rīāḥī, 3 vols., Tehran, 1364 Š./1985, repr. 1369 Š./1990.

R. Matthee, "Unwalled Cities and Restless Nomads: Firearms and Artillery in Safavid Iran," in C. Melville, ed., *Safavid Persia*, London, 1996, pp. 389-416.

Mollā Jalāl-al-Dīn Monajjem Yazdī, *Tārīḵ-e ʿabbāsī yā rūz-nāma-ye Mollā Jalāl*, ed. S. Waḥīdnīā, Tehran, 1366 Š./1987.

Ḵ. Moʿtažed, *Ḥājj Amīn-al-Żarb: Tarīḵ-e tejārat wa sarmāya-goḏārī-e ṣanʿatī dar Īrān*, Tehran, 1366/1987.

F. I. Müller, *Auszug aus dem Tage-Buch des ehemahligen Schiffhauptmannes Herrn F. I. Soimonov*, in G. E. Müller, ed., *Sammlung russischer Geschichte*, 10 vols, St. Petersburg, 1762.

M.-Ṭ Naṣrābādī, *Taḏkera-ye Naṣrābādī*, Tehran, 3d ed., 1362 Š./1983.

H. Nāṭeq, *Īrān dar rāh-yābī-e farhangī, 1834-1848*, Paris, 2nd ed., 1990.

R. W. Olson, *The Siege of Mosul and Ottoman-Persian Relations 1718-1743*, Bloomington, Ind. 1975.

M. von Openheim, *Vom Mittelmeer zum persischen Golf durch den Hauran, die Syrische Wüste und Mesopotamien*, 2 vols., Berlin, 1900.

B. von Palombini, *Bündniswerben abendländischer Mächte um Persien 1453-1600*, Wiesbaden, 1968.

J. Perry, *Karim Khan Zand: A History of Iran, 1747-1779*, Chicago, 1979.

A. Piemontese, "An Italian Source for the History of Qāğār Persia: The Reports of General Enrico Andreini (1871-1886)," *East and West*, N.S., 19, 1969, pp. 147-75.

J. Pitton de Tournefort, *Relation d'un voyage du Levant*, 2 vols., Paris, 1717.

H. Pottinger, *Travels in Beloochistan and Sinde*, London, 1816.

Sr. Poullet, *Nouvelles relations du Levant*, 2 vols., Paris, 1668.

J. Qāʾem-maqāmī, "Tārīḵča-ye sarbāz-gīrī dar Īrān," *Barrasīha-ye tarīḵī* 2/3, 1346 Š./1967, pp. 64-92.

J. Qūzānlū, *Tārīḵ-e neẓāmī-ye Īrān*, 2 vols., Tehran, 1315 Š./1936.

N. de Orta Rebello, "Relaçao da jornada que fez□" in J. Verrissimo Serrao, ed., *Un voyageur portugais en Perse au début du XVIIe siècle*, Lisbon, 1972, pp. 59-226.

F. Richard, *Raphaël du Mans: Missionaire en Perse au XVIIe s.*, 2 vols., Paris, 1995.

M. de Rochechouart, "Le commerce d'exploration de la Perse et ses fabriques d'armes," *Annales des voyages* 1, 1867, pp. 50-80.

M. Roschanzamir, "Die Zand-Dynastie," Ph.D. diss., University of Hamburg, 1970.

Ḥasan Beg Rūmlū, *Aḥsan al-tawārīk*ò, ed. ʿA. Navāʾī, 2 vols, Tehran, 1349-57 Š./1970-78.

W. Sainsbury, ed., *Calendar of State Papers, Colonial Series: East Indies, China, and Japan, 1617-1621*, London, 1870, repr. Vaduz, Liechtenstein, 1964.

Walīqolī b. Dawūdqolī Šamlū, *Qeṣaṣ al-ḵāqānī*, ed. S. H. Sādāt Nāṣerī, 2 vols., Tehran, 1371-74 Š./1992-95.

R. Savory, "The Sherley Myth," *Iran* 5, 1967, pp. 73-82.

Idem., "Bārūd. The Safawids," *EI2* I, pp. 1066-68.

B. Scarcia Amoretti, ed., *Šāh Ismāʿīl I nei "Diarii" di Marin Sanudo* I, Rome, 1979.

W. A. Shepherd, *From Bombay to Bushire, and Bussora*, London, 1857.

H. Slaby, *Bindenschild und Sonnenlöwe: Die Geschichte der österreichisch-iranische Beziehungen bis zur Gegenwart*, Graz, 1982.

H. Stöcklein, “Arms and Armour,” in *Survey of Persian Art* VI, pp. 2555-85.

R. B. Smith, *The First Age of the Portuguese Embassies: Navigations and Perigrenatio*

ns in Persia (1507-1524), Bethesda, Md., 1970.

I. Stchoukine, *Les peintures des manuscrits Safavis de 1502 à 1587*, Paris, 1959.

S. Subrahmaniyam, “The *Kagemusha* Effect: The Portuguese, Firearms and the State in Early Modern India,” *Moyen Orient et Océan Indien* 4, 1987, pp. 97-123.

J. M. Tancoigne, *Lettres sur la Perse et la Turquie d’Asie*, Paris, 1819.

J.-B. Tavernier, *Les six voyages de J. B. Tavernier en Turquie, Perse, et aux Indes*, 2 vols., Utrecht, 1712.

L. Thornton, ed., *Images de Perse: Le voyage du Colonel F. Colombari à la cour du Chah de Perse de 1833 à 1848*, Paris, 1981.

R. R. Tousi, “The Persian Army, 1880-1907,” *Middle Eastern Studies* 24, 1988, pp. 206-229.

Travels to Tana and Persia by Josafa Barbaro and Ambrogio Contarini, tr. W. Thomas and ed. Lord Stanley of Alderley, Hakluyt Society 49, London, 1873, pp. 15, 78.

U. Tucci, “Una relazione di Giovan Battista Ve cchiettisulla Persia e sul regno di Hormuz (1587),” *Oriente Moderno* 35, 1955, pp. 149-60.

M. Y. Wāla Eṣfahānī, *Ḵold-e barīn*, ed. M- H. Moḥaddeṯ, Tehran, 1372 Š./1993.

F. Valentyn, *Nieuw and oud Oost Indiën*, 8 vols. in 5, Dordrecht and Amsterdam, 1716.

G. B. Vechietti, “Lettera,” ed. H. F. Brown in “A Report on the Condition of Persia in the Year 1586,” *English Historical Review* 7, 1892, pp. 314-21.

J. E. Woods, *The Aqquyunlu: Clan, Confederation, Empire*,Minneapolis and Chicago, l976.

Idem, “The Aq-qoyunlu and Firearms,” in Faẓl-Allāh b. Rūzbehān Ḵonjī, *Tārīḵ-e ʿālamārā-ye amīnī*, ed. J. E. Woods, London, l992, annex II, p. 98.

D. Wright, *The English Amongst the Persian: During the Qajar Period 1787-1921*, London, 1977.

Idem, *The Persians Amongst the English*: *Episodes in Anglo-Persian History*, London, 1985.

Z. Zygulski, “Oriental and Levantine Firearms,” in C. Blair, *Pollard’s History of Firearms*, New York, 1983, pp. 425-462.