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From Matchlocks to Machine Guns. The Modernisation of the Tibetan Army's Firearms Between Local Production and Import (1895-1950)

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Abstract Between 1895 and 1950, the Tibetan government took several steps to improve the firearms and artillery of its troops, setting up local factories and negotiating with foreign powers to purchase arms manufactured abroad. These imports were directly related to the political relationship with these countries and required the introduction and diffusion of new knowledge and techniques among Tibetan troops. Based on Tibetan and English sources, this article discusses some of the challenges met by the Tibetan government in this process and gives an overview of the variety of modern firearms that the Tibetan army used in the early twentieth century.

Keywords Tibet. Tibetan history. Weapons. Firearms. Matchlocks. Small arms. Artillery. Arms imports. Arm production. Arsenal. British India. British Raj. Younghusband Expedition. Qing China.

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1 Introduction

The story of the transformation of the Tibetan army's weaponry during the first half of the twentieth century, of the Tibetan government's various attempts to keep pace with the contemporaneous rapid development of light firearms and artillery, and to keep its army's equipment as up to date as possible has partly fallen into oblivion for a number of reasons. First, it is certainly linked with a tendency to apply an *a posteriori* reading to history: the military history of Tibet in the early twentieth century is ultimately one of defeat, and any steps taken by the Tibetan government towards the modernisation of its weapons have been deemed not only as insufficient but as historically insignificant. Second, the eventual insufficiency of these efforts has often and too quickly been explained by the 'religious nature' of the Tibetan government – and thus by a supposedly inherent incapacity of a Buddhist government to deal with military matters.[1] Third, all the while the much more significant role played in this period by international politics in both the successes and failures of Tibet in the development of its firepower has partly been underestimated. Fourth and last, the 'backwardisation' trend that characterises Western and Chinese literature on early twentieth-century Tibetan society has not spared Tibetan weaponry. This tendency has led many observers of early twentieth-century Tibet to focus more on the 'medieval folklore' they witnessed in all fields, including weaponry, than on any signs of technical developments (except for those they had some responsibility in bringing about). There have even been well-known attempts to falsely present either antique weapons kept as *ex voto* in temple chapels or centuries-old ceremonial attire (armour, helmets, barding, etc.) that was donned to showcase the ancient Tibetan military heritage during annual State festivities as being the actual military equipment still in use by the Tibetan army at times of war in the early twentieth century.[2]

I would like to express my deep gratitude towards Jonathan Ferguson (Keeper of Firearms and Artillery, Royal Armouries Museum, Leeds), Donald La Rocca (Curator emeritus of the Arms and Armor Department at the Metropolitan Museum of Art, New York), Federica Venturi (Researcher in the 'TibArmy' project and coeditor of this volume) and the two anonymous reviewers for their valuable and very useful comments on an earlier draft of this article. All errors and misunderstandings remain mine. Research for this article was funded by the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme ('TibArmy', grant agreement 677952).

1 For a thorough deconstruction of that idea in the Tibetan context, see Travers, Venturi, *Buddhism and the Military in Tibet*.

2 See for instance the photographs of such armour, shields and helmets and the related ambiguous descriptions published by L. Austine Waddell, the medical officer to the 1903-04 'Younghusband expedition', in his book *Lhasa and Its Mysteries*. As has been exposed by Michael Fredholm (Fredholm, "The Impact of Manchu Institutions") and by Clare Harris (Harris, *Photography and Tibet*, 9-10; *The Museum on the Roof of the World*,

However, considering that Tibetans started their transition from matchlock musket to modern firearms with a delay of approximately fifty years compared to their overlord at the time, Qing China – whose own shift to modern weapons was 'ignited' by the Opium Wars in the mid-nineteenth century[3] – the speed of the Tibetan transition could justify calling it a 'firearms revolution'. Indeed, the reason behind the Tibetan military defeat when faced with the small corps of Anglo-Indian troops that formed the 'Tibet-Mission Force' under the orders of Colonel Younghusband in 1903-04 (which later became known as the 'Younghusband expedition') was primarily the result of the Tibetan army's lack of modern military equipment, and specifically firearms, in addition to other factors.[4] As this paper will show, the best and smallest fraction of its firepower consisted of a few imported but mostly locally produced modern firearms of lower quality, while the rest of its firepower consisted of old Tibetan-made muzzle-loading guns, specifically matchlocks,[5] not to mention the remaining pres-

130-5), these photos, presented by Waddell as a reflection of the military equipment then in use by Tibetan soldiers, were actually staged in Chumbi with porters wearing obsolete military equipment kept in the protectors' chapel (*mgon khang*) of a nearby temple. Michael Fredholm is of the opinion that the horse armour on the photographs had fallen out of use already in the mid-seventeenth century and, as for the accompanying descriptions of such weapons, argues that "it is far more likely that Waddell here referred to the use of obsolete armour and weapons in religious ceremonies, which did take place in Tibet at the time, rather than any form of military activity, ceremonial or otherwise" (Fredholm, "The Impact of Manchu Institutions", 4-5). As underlined by Clare Harris, Waddell's intention was mainly to convince the reader of the validity of Younghusband's actions in Tibet. All available testimonies by other members of the mission confirm that this particular part of Waddell's account was misleading (as will be seen later in the present paper, Waddell himself reports in his book on the modern rifles that were produced in Lhasa and used by the Tibetan army). In his detailed account of the 'Tibet mission' in which he took part as a correspondent for the *Times* magazine, Perceval Landon for instance reports "vague rumours [...] generally embroidered with accounts of mailed horsemen and other picturesque details, which unfortunately were never justified by the fact" (Landon, *Lhasa*, vol. 1, 156), and describes that the only firearms used among Tibetan soldiers comprised both matchlocks and rifles of inferior quality and less modern that their own, in addition to a number of wall guns known as *jingal*. See the third part of this paper for more details on the variety of weapons used by Tibetans in 1903-04.

3 Andrade, *The Gunpowder Age*, 257-96.

4 The British forces comprised highly trained professional soldiers, both officers and enlisted men, well disciplined and with extensive battlefield experience, which was certainly not the case, at that time (i.e. before the military reforms started under the Thirteenth Dalai Lama), of the small body of Tibetan regular troops, that received only seasonal training and had little field experience; even less so in the case of the rest of the troops, which was composed of regional levies.

5 According to Donald La Rocca, "the matchlock [was] used in Europe from the fifteenth to the seventeenth century and in Tibet from at least the seventeenth century until well into the twentieth. The most obvious feature of the Tibetan matchlock is the pair of long thin prongs, used to prop up the weapon when shooting on foot as opposed to on horseback" (La Rocca, *Warriors of the Himalayas*, 5 and photos number 99 to 102 in the catalogue; see also in Donald La Rocca's contribution to the present volume). For a detailed discussion of the history of the Tibetan matchlock and descrip-

ence of even older traditional Tibetan weapons such as swords. Tibetan firearms in that battle were strikingly less numerous, slower in use, less accurate and of shorter range than those of their enemy, in possession of bolt-action rifles, cannon and Maxim guns.[6] Only fifty years later, when defeated by the Chinese People's Liberation Army in 1950, did Tibetan troops possess a variety of imported, modern, small and light, automatic firearms and artillery. Though the People's Liberation Army was equipped with more modern arms, the gap in nature between the two armies' firearm equipment was not as significant as it had been against British India, and cannot be considered the main reason for the swift Tibetan defeat.[7]

tions of its various parts with their terminology, as well as sketches and photographs, see Tashi Tsering Josayma's contribution in this issue. Interestingly, the prongs were also a characteristic feature not only of the Chinese musket after its introduction in the mid-sixteenth century, but also of the Islamic Turkish, Persian and Indian world; Qing China also continued to produce matchlock muskets for local use after they began purchasing and producing modern western-style rifles in the early second half of the nineteenth century (Theobald, "European Weapons in China", 4 and 6).

Whether the flintlock technology reached Tibet seems doubtful. While flintlocks progressively replaced the matchlock in Europe from the seventeenth century on, flintlocks never made their way to Qing China (except as gifts to the emperor), where the use of matchlocks continued well into the nineteenth century (cf. Andrade, *The Gunpowder Age*, 242 ; Theobald, "European Weapons in China", 6). Tibet could well have imported them from other neighbouring countries, like India or Russia, however primary and secondary sources are ambiguous. Tibetan sources are of no help to decide the issue, as the term *me mda'* (lit. 'fire arrow'), became the generic term for any type of firearm. Most English language sources mention only matchlocks. A few mentions of the English term 'flintlock' can be found, however either made by authors with no expertise in the technical diversity of ancient muskets (in the case of Richardson, *Ceremonies of the Lhasa Year*, 34 and Tung, *A portrait of Lost Tibet*, pl. 98), or in sources translated into English from other languages, which raises the hypothesis that it results from an erroneous choice made by the translator, as it is the case for instance in a translated book by the Japanese monk Ekai Kawaguchi that will be discussed further below in this paper. In a personal communication, Donald La Rocca states that while exemplars of Tibetan matchlocks are numerous in various collections all over the world, he is not aware of any flintlock from Tibet being extant today in any private or Museum collection (the closest flintlock geographically, somewhat similar to Tibetan matchlocks, would be a flintlock musket from Siberia in the Met, accession number 36.25.2179).

6 Maxim guns, the first recoil-operated machine guns, were designed by the American-British inventor Hiram Stevens Maxim in 1884. They were usually operated by a team of four to six men. Maxim guns were used in British colonial warfare from 1886 onward and were replaced in the British army by the Vickers gun in 1912 (see **[fig. 13]**) – the Vickers gun being a Maxim-type machine gun, simplified and lightened, its original name was 'Vickers-Maxim' (I am indebted in Jonathan Ferguson for this information). After the arrival of the Lewis gun, Maxim guns were redefined as heavy machine guns, having a more strategic role. There are several models of Maxim gun (some looking like a cannon and some lighter versions mounted on tripods) and it seems that those used by the British in Tibet were of the first type (see a photograph of one specimen reproduced in Tashi Tsering Josayma's contribution to this volume). On the Maxim guns and the severe imbalance in firepower during the 1903-04 'Tibet mission', see Harris, *Photography and Tibet*, 58.

7 Besides, Alex Raymond's recent research has shown that the battle of Chamdo in October 1950 was won only in extremis by the Chinese troops, who faced a variety of food

Thus, one aim of this paper is to document the chronology of the modernisation of firearms in the Ganden Phodrang (Dga' ldan pho brang)'s army during the first half of the twentieth century by dating the progressive appearance of modern types of firearms and giving their Tibetan terminology (see Appendix 1). More importantly, the paper seeks to analyse the means at the disposal of the Tibetan government to enact this modernisation. Indeed, in the past as in the present, all governments are confronted with the same two options when it comes to obtaining new weapons – producing them locally and/or importing them. Most governments chose to rely on both means for obvious strategic reasons: self-production is the only way to avoid being entirely dependent on other countries, while, at the same time, imports are instrumental to take advantage of the latest innovations in weapons technology without the expense of research and development, which is borne by more advanced countries. Moreover, imports are also a way to modernise local production, with imported weapons serving as models that can be copied domestically. This pattern was widespread in most Asian countries from the seventeenth to the twentieth centuries, and is described by Peter Lorge in his book *The Asian Military Revolution*.[8] This paper will therefore analyse how Tibet handled these two modes of modernising its firearms, local production and imports, in order to better understand during the period under scrutiny when each of these two strategies started, reached its peak, succeeded or failed and why. The paper argues that, contrary to earlier analysis, the Tibetan government not only tried, but also partly succeeded, in obtaining the best available weapons and training, but that it failed to modernise fully its army because Tibet had great difficulty producing its own modern weapons, being a technologically limited country and because its only ally, British India, carefully regulated the transfer of technology and supplies of weapons.

Thanks to the pioneering work of Melvyn Goldstein, a part of the story of firepower development in Tibet before 1950 is already quite well-known, namely the history of weapon imports to Tibet from British India during the period from 1913 to the fifties and their extreme dependency on domestic and foreign Tibetan politics – specifically, both the Tibetan government's fluctuating will to prioritise military

supply and logistical problems. Not in a capacity to continue their advance into Tibet, they pursued a policy of negotiation with the Tibetan government (Raymond, "The Origins of the 17-Point Agreement", 2; Raymond, "Mao, the Chinese Communist Party").

8 Peter Lorge has underlined this process during the first diffusion of firearms in the world: "European weapons were somewhat better when they reached Asia in large numbers in the sixteenth century. Asia then became part of the European arms trading system, incorporating new advances as they became available. As a result, Asia was never more than a decade or two behind Europe in its weaponry" (Lorge, *The Asian Military Revolution*, 17).

modernisation and the persistent reluctance of the British to export weapons in sufficient number to Tibet. Nevertheless, certain chronological and thematical gaps remain regarding our knowledge of the development of firepower in Tibet before 1950 which this paper aims to address, on the one hand by studying local production and imports before 1913 – the start date for Goldstein's study – based on hitherto unexploited documents from British archives (mostly those kept at the National Archives of India),[9] and on the other hand by taking into account the testimonies of Tibetan soldiers, which is made possible thanks to former Tibetan soldiers' and officers' autobiographical accounts recently published both in the Tibet Autonomous Region and in exile. These Tibetan accounts have a triple advantage: they allow us not only to better understand Tibetan oral traditions regarding the history of weapons manufacture in its earliest stages and to have a direct understanding of the personal experiences of Tibetan soldiers in this 'firearms revolution', but also to document the Tibetan terminology of modern firearms.

Based mainly on the above-mentioned two types of sources (Tibetan autobiographies and Indian archives) as well as other British archives and accounts, a few Tibetan archive documents, and photographic sources, this paper will analyse how the Ganden Phodrang government endeavoured to negotiate through local production and importation the crucial modernisation of its army's firearms from 1895 to 1950, i.e. the period of the Thirteenth Dalai Lama (r. 1895-1933) and the regency (1933-50). After a few preliminary remarks on the history of firearms in Tibet before the late nineteenth century, this paper will first document the search for self-sufficiency through local production and then the subsequent prevailing importation strategy, along with the challenges it raised.

9 Abbreviated as NAI in the references. British Archives from the India Office Records (abbreviated IOR) at the British Library, London and from the Foreign Office (abbreviated FO) at the British National Archives (Kew Gardens) were also used for this paper.

2 Preliminary Remarks on the Import and Manufacture of Firearms in Tibet from the Seventeenth to the Nineteenth Century

The first known mention in a written source of firearms, to be precise, of matchlocks muskets (*me mda'* or *me'i mda'*),[10] being used by Tibetans is found, according to Tashi Tsering Josayma, in the autobiography of the First Panchen Lama and dates to 1618-19.[11] The use of matchlocks in the seventeenth century is attested in several sources.[12] Yet neither their prevalence nor Tibet's relative level of advancement in comparison to its immediate neighbours during the seventeenth to nineteenth centuries has so far been fully assessed. If one reads Petech's descriptions of the major armed conflicts in Tibet in the eighteenth century,[13] it is apparent that for this period the generalised use of firearms in battle is well documented. Matchlocks, wall guns or swivel guns (*me'i mda' chen*)[14] and cannons (*me sgyogs*)

10 Also known as *bog* in Kham (Khams), see Tashi Tsering Josayma in this issue.

11 Tashi Tsering Josayma in this issue. Donald La Rocca writes about the progressive introduction of firearms in the sixteenth century "from several sources, including China, India, and West India, as part of the general spread of the use of firearms throughout Asia" (La Rocca, *Warriors of the Himalayas*, 198).

12 For a discussion of references to firearms in early historical sources, see Tashi Tsering Josayma in this issue. See also Venturi in this issue for a study of a text authored by the Fifth Dalai Lama on the Dorjéling (Rdo rje gling) armoury founded in 1667, in which '*phrul sgyogs me* and *me mda*' are mentioned.

13 See Petech's mentions of the firearms (guns and cannons) of Pho lha nas' troops based on the *Mi dbang rtogs brjod* at the time of the Dzungar invasion of Tibet in 1717-20 (Petech, *China and Tibet in the Early 18th Century*, 38), during the civil war in 1720-28 (Petech, *China and Tibet in the Early 18th Century*, 125, 126, 130, 132, 138), and in 1750 (Petech, *China and Tibet in the Early 18th Century*, 214).

14 Petech translates *me'i mda' chen* as "swivel guns" and records their use from the civil war in 1720-28 onward. He defines the long-lasting "swivel guns" in Tibet as follows: "They were long-barrelled small-bore weapons. In 1904 they were still in use and played a great part in the siege of the British mission at Gyantse [Rgyal rtse]. Waddell calls them by the Anglo-Indian name *jingal* (on which see Yule, Burnell, *Hobson-Jobson*, London 1886, 285, s.v. "gingall"). It was not cannon; that is called in the *MBTJ* [*Mi dbang rtogs brjod*] *me-skyogs* [*sic*]" (Petech, *China and Tibet in the Early 18th Century*, 125 fn. 3). However, the *jingals* of Waddell's (and Landon's) reports on the Younghusband expedition are defined as "small cannons" (Waddell, *Lhasa and Its Mysteries*, 249), which raises doubts on the fact that the *me'i mda'i chen* of the eighteenth century and the *jingal* used in 1903 against the British would be the exact same firearms. The link established by Petech between the *me'i mda'i chen* and the Anglo-Indian *jingal* does not clarify the matter, as a *jingal* could designate two different types of firearms, according to the Hobson-Jobson's definition, i.e. a "swivel *or* wall-piece" (emphasis added). The later *Encyclopaedia Britannica* dated 1911 defines also the *gingall* or *jingal* as possibly designating two different types of firearm: "a gun used by the natives throughout the East, usually a light piece mounted on a swivel; it sometimes takes the form of a heavy musket fired from a rest". More precisely, in the seventeenth- and eighteenth-century Europe, a wall gun was an oversized (matchlock or flintlock) musket, with a swivel mount, designed to be mounted or rested on a wall or parapet; it had a wooden stock

represented the most significant weapons, and the quality of the Tibetan troops' equipment seems to have been even a cause for envy among some of Tibet's neighbours.[15]

However, the situation in the nineteenth century, as described by Shakabpa Wangchuk Déden (Zhwa sgab pa dbang phyug bde ldan, 1907-1989), a historian and former Tibetan Minister of Finances (*rtsis dpon*, 1939-50), seems quite less brilliant. Shakabpa records that in the war against Ladakh in 1842, Tibetan troops had at their disposal only a few locally produced matchlocks (*bod mda'*) and were fighting largely with "arrows, lances and swords, the three" (*mda' gri mdung gsum*) – the usual trilogy of weapons of Tibetan soldiers before the introduction of firearms –, while the Sikhs opponents fought with more modern firearms, referred to by Shakabpa as *'phrul mda'* (*'phrul* literally designates a technological 'wonder', i.e. the mechanism through which the gun is actioned),[16] which were probably flintlocks or percussion firearms.[17] The Sikhs also used cannons (*me*

allowing use of the shoulder and a conventional musket-style lock and trigger. As for the swivel gun, it was a small artillery piece without a stock and so without a conventional trigger either, thus looking more like a small cannon (I am indebted in Jonathan Ferguson for these definitions of the swivel gun and the wall gun); see also online images of wall guns (for instance `https://collections.royalarmouries.org/object/rac-object-25086.html`) in the collections of the Royal armoury of Leeds, versus swivel guns in the same collections (for instance `https://collections.royalarmouries.org/object/rac-object-6760.html`). Waddell's description of the twentieth century *jingal* relates it rather to the swivel gun, while Petech's own description of the Tibetan *me'i mda' chen* in the eighteenth century as a "long-barrelled small-bore weapons", relates it rather to the wall gun (I am indebted in Donald La Rocca for pointing at this fact). For images of various specimen of Tibetan wallguns in the museum of Kathmandu, see Venturi's contribution in this issue (images 7a to c). It also has to be noted that the twentieth-century Tibetan historian Shakabpa used the Anglo-Indian word *jingal* (*'jin 'gal zhes pa'i me mda'*) for weapons seized from the Chinese troops in 1912 (Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 212).

15 Petech is of the opinion that the Tibetan soldiers under Pho lha nas, at the time of the Dzungar invasion of Tibet in 1717-20, possessed more modern firearms than the Dzungars. Also, according to Petech, the Dzungars at that time did not yet benefit from the instruction famously given from 1716 onwards by the Swedish prisoner and artillery specialist Johan Gustaf Renat (Petech, *China and Tibet in the Early 18th Century*, 41; see also the introduction to this volume).

16 Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 4. The English translation by Derek Maher of this passage uses the term "mechanical guns": Shakabpa, *One Hundred Thousand Moons*, 582. It is interesting to see how the same Tibetan term of *'phrul mda'* takes on successive meanings as technical advances are made and become known: as will be seen in the third part, *'phrul mda'* would later, at the turn of the nineteenth and twentieth centuries, take on the meaning of 'breechloader'; later in the twenties, it will come to take on the new meaning of a semi-automatic magazine-fed gun and, again later, even of automatic machine guns.

17 Breechloading military rifles were a very new innovation in 1842 and probably had not reached the Sikhs by that time (I am indebted to Donald La Rocca for this information).

Figures 1-2 Breech area and detail of gold-inlaid Tibetan inscription on a musket barrel. Tibetan. Ca. eighteenth-nineteenth century. Iron, gold, and silver; overall length. 46 1/8 in. (117.2 cm); .65 caliber (17 mm). © The Metropolitan Museum of Art, Purchase, Arthur Ochs Sulzberger Gift, 2001 (2001.62)

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sgyogs).[18] Yet the related questions of when exactly the Tibetans first started importing firearms and first started manufacturing firearms themselves remain unanswered. Concerning self-production, while more ordinary production could well go back to the mid- to late seventeenth century,[19] the earliest evidence of the desire for very high-quality local production is a musket barrel probably produced in the eighteenth or early nineteenth century kept at the Metropolitan Museum. It is inlaid in gold at its breech **[fig. 1]** with the phrase "forged in Tibet" (*bod brdungs yin*) **[fig. 2]**.[20]

In order to make some preliminary remarks on the chronology of firearms production and import in Tibet before the late nineteenth century, we will rely here on oral traditions reflected in several modern Tibetan accounts and on secondary sources. According to the account of the former General (*mda' dpon*, the highest-ranking Tibetan military officer)[21] Taring Jikmé Sumtsen's (Phreng ring 'jigs med sum rtsen, 1908-1991),[22] the most ancient type of firearms used in Tibet, those of the muzzle-loading type with gunpowder and bullet inserted into the muzzle (*me mda'i kha nang rdzas*), were still mostly imported in the eighteenth century.[23] Indeed, as underlined in his and in another Tibetan account authored by a former official who worked as a clerk (*dmag drung*) in the Army headquarters (*dmag spyi khang*), Nornang Ngawang Norbu (Nor nang ngag dbang nor bu, c. 1911-1989),[24] the var-

18 Shakabpa, *One Hundred Thousand Moons*, 582; Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 4.

19 According to Donald La Rocca (personal communication).

20 Metropolitan Museum of Art, accession number 2001.62, reproduced and analysed in La Rocca, *Warriors of the Himalayas*, 208 fn. 104. La Rocca comments on this weapon: "The pattern-welded twist of the barrel, the shape of the muzzle and the priming pan, and the style of the decoration suggest that this musket barrel was also the work of an Indian or Indian-trained craftsman, probably working in Lhasa during the eighteenth or nineteenth century". I am indebted to Donald La Rocca for pointing at this particular piece and its significance.

21 On the organisation of the Tibetan troops, the officers' corps and their titles, see Travers, "The Tibetan Army of the Ganden Phodrang".

22 Dates according to *Who's Who in Tibet*, 85 (IOR/L/P&S/20 D 220/2); and interview with Nor nang *dge bshes* ngag dbang blo gros (born 1924), Seattle, 2 and 04 October 2006. See Taring's account on the development of weaponry in Tibet up to the twentieth century written in 1933 and reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 31-40 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 26-31). The English translation of this book is in places not entirely faithful to the Tibetan original; in this paper the Tibetan version will always be mentioned first.

23 Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 32 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27).

24 Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 46-79 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 36-48). Regarding the rest of his career as a government official, Brit-

ious names of a number of pre-twentieth century Tibetan-made matchlocks include *sog* or *hor*, a Tibetan term designating Mongols: *sog chu bab*, *sog pho mo g.yas bcus*, *sog pho mo g.yon bcus*, *sog gling bzhi ma*, *sog dar ma chu 'bab*, *sog sgam mda' ma*, *hor nya mig ma*, and *dzam grags*.[25] The reason could be that the firearms of that time were either imported by Mongolians and/or modelled after Mongolian prototypes.[26]

According to Taring, the Tibetan government started only later – by which he seems to mean the early nineteenth century – to manufacture its own matchlocks and ammunition in large quantities,[27] with the result that

ish archives contain the following note: "Nornang-pa. Personal name Ngawang Norbhu. Born 1911. Entered Government service in 1935. Made a clerk in the Army office. Appointed Dzong-pon of Saka in W. Tibet in 1945. Appointed Dzongpon of Gyantse in June 1950. Appointed an assistant to Tibetan Trade Mission at Kalimpong, June 1952", cf. *Who's Who in Tibet*, 85 (IOR/L/P&S/20 D 220/2).

25 Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 63 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 46). The last term *dzam grags* denotes a firearm named *dzanbara*, which was used by the Dzungars during their 1719 invasion of Tibet, see Shim, "The Zunghar Conquest of Central Tibet", 100. According to Shim, it was first invented by Mamluk soldiers in Egypt in the sixteenth century (*zanbūr* in Persian), and was "bigger than an ordinary musket and smaller than a cannon. Therefore, it had greater destructive power and a longer range than a normal musket, while being easier to transport and manoeuvre than a cannon" (Shim, "The Zunghar Conquest of Central Tibet", 100). A few of these firearms (under the name *'dzam rags* / *'dzam reg*) are already mentioned in the biography of the Sixth Dalai Lama (1683-1706) in a list of gifts received in 1700, which indicates at least a minimal knowledge and limited use of such a weapon in Tibet prior to the Dzunghar invasion in 1719 (Sde srid sangs rgyas rgya mtsho, *Sku phreng drug pa'i rnam thar*, 630). Last, this weapon (*dzam grags*) is described by the Thirteenth Dalai Lama in his "Preamble to the book of Tibetan-made machine guns, for the Tibetan Army commanding officers' bureau" as having been produced by Tibetans themselves for a time (*bod rje mi dbang gi dus*) which might correspond to Pho lha nas' rule, i.e. 1727-47 (Venturi, "The Thirteenth Dalai Lama on Warfare", 498). The description of the Mongolian *dzanbara* in Hosung Shim (bigger than a musket and smaller than a cannon) corresponds very closely to that of the above-mentioned Tibetan *me'i mda' chen* and the later Indian term *jingal* (being either a wall gun or a swivel gun) mentioned by Petech as being used by Tibetans already in 1720-27. All those terms might thus be synonyms, or terms of different etymology used to designate the same firearm (I am indebted to Federica Venturi for this suggestion). Nonetheless, the fact that two sources dating from the early eighteenth century use two different names – *me'i mda' chen po* in the *Mi dbang rtogs brjod* and *'dzam rags* in the Sixth Dalai Lama's biography – and that two different sources from the early twentieth century do the same (regarding a 1912 event as will be seen later), *dzam grags* in the Thirteenth Dalai Lama's writings quoted by Venturi and *'jin 'gal* in Zhwa sgab pa (*Bod kyi srid don rgyal rabs*, vol. 2, 212), could also point to the opposite.

26 Taring hypothesises that this designation came about because their first models were seized from the Dzungar Mongols in the early eighteenth century; Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 32 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27).

27 Taring does not give any specific date but his chronological narrative leads one to believe that he is speaking of the early nineteenth century; Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 32 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27).

Figure 3 Example of a Tibetan matchlock musket, nineteenth century. © The Metropolitan Museum of Art, Bequest of George C. Stone, 1935 (36.25.2174)

during the Tibetan-Gurkha War in 1854 and Tibetan-British battles in 1888 at Lungtur and other border places of Tibet, the Tibetan army used indigenous guns (*bod bzos me mda'*)[28] and indigenous cannon (*bod bzos me sgyogs*).[29]

As previously mentioned, Shakabpa records that Tibetan-made guns (*bod mda'*) had been used even a little earlier, in the war against Ladakh in 1842.[30]

The local production comprised not only matchlocks (see **[fig. 3]**) but also heavy cannon and bullets: Shakabpa writes that two Tibetan-made cannons of a type known as *se hril* were seized by the British during the first Anglo-Tibetan war in 1888.[31] Taring provides a list of cannons produced and used against the British in 1888 and 1904. Like in other countries, individual cannons received proper names and the list includes, in addition to *se ril* [*sic*], *srin mo bgres gzhon*, *kha 'bar ma*, *gnam lcags*, *lkug pa*, and *lcam sing*, the memory of which was kept alive as these cannons continued to be fired dur-

28 On Tibetan-made muzzleloaders, also referred to as *bog*, see Tashi Tsering Josayma's paper in this issue.

29 Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 32 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27).

30 Shakabpa, *One Hundred Thousand Moons*, 582; Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 4.

31 An episode that was recorded in a Lhasa street song; Shakabpa, *One Hundred Thousand Moons*, 648; Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 90.

ing the Monlam Festival in Lhasa into the early twentieth century.[32]

However, already in the nineteenth century local production appears not to have been an efficient means for Tibetans to keep pace with the then rapid modernisation of firearms. Petech records that in 1864, "bŚad-sgra [the then regent of Tibet] had approached the Nepalese government for the loan of some modern artillery, *of which Tibet had none*" and that in the end Jang Bahadur agreed to a loan of six mountain guns.[33] In 1882, when Sarat Chandra Das entered Tibet, he noticed that the regular Tibetan army and the militia were armed with "matchlocks, bows and arrows, long spears, and slings (*ordo*)".[34] The first Anglo-Tibetan war in 1888 was certainly instrumental in making Tibetans realise the inadequacy of their locally produced firearms. Taring mentions a first subsequent technical innovation taking place around 1890 with the production of a new type of cannon called the *gor kha yang chan*,[35] which had, according to his description, a "cap" (also called *kro pi*) for the gunpowder and did not need a "'*bud rti* (?)".[36] From 1895 onwards during the reign of the Thirteenth Dalai Lama, a number of initiatives were undertaken further to develop and to improve local production.

32 Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 32-3 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27). Interestingly, some of the Tibetan cannons used against the British during the siege of Gyantse were also baptised by the British: they christened one *jingal* that had a longer range than the other guns 'Chota Billy' or 'Little Billy' (by comparison with a bigger piece of artillery they had baptised 'Billy') (Landon, *Lhasa*, vol. 1, 335).

33 Petech, *Aristocracy and Government in Tibet*, 179 fn. 1 (emphasis added). Petech quotes as his sources "Rose" (Rose, *Nepal*), 122 and "*MTSL*" (an abbreviation for his reference to *Ta-Ch'ing li-ch'ao shih-lu*, Mu-tsung), 86.44a-45v, 86.48a, 111.7b-8a, 115.13b-14a, 260.3a-b, 260. 25a-b. A mountain gun designates a gun capable of being dismantled for easier transportation in mountainous terrain by mule, horse or other pack animal.

34 Das, *A Journey to Lhasa*, 161.

35 The recurrent use of *yang chan* / *yang can* / *yang chang* most probably derives from the phonetic rendering of the Chinese term *yangqiang* 洋槍 which designated a Western-style gun.

36 Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 33. The Tibetan reads: *sna (rna) rdzas la kro pi zhes pa / dbyin skad la keb g.yog ste 'bud rti ma dgos pa*. However, both the Tibetan original and the translation in the English version of the book remain unclear: we read that the *gor kha yang chan* had "a lid (called *kro pi* in Nepali and cap in English) and did not need an igniter" (Gyaltse Namgyal Wangdue, *Political and Military History*, 27). The exact nature of the English term 'cap' here is not clear: if it was a percussion cap, it was already old technology in 1890, but it could design the primer; the translation by Yeshi Dhondup of *'bud rti* as 'igniter' requires also some comments, as all guns need some form of ignition. The 'igniter' here could design the 'friction tube'. If so, the innovation referred to here could be the replacement of a friction tube primer (a copper tube of gunpowder inserted into the vent and fired with a lanyward [pull-cord]) with a more modern system such as a self-contained cartridge. The *gor kha yang chan* could thus have been a modern mountain gun (I am thankful to Jonathan Ferguson for his explanations and suggestions on the interpretation of this passage).

3 Local Manufacture of Firearms in Tibet (1895-1950). The Search for Self-Sufficiency

The reign of the Thirteenth Dalai Lama (1895-1933), whose personal interest in military matters and firearms no longer requires demonstration,[37] truly represents a new chapter in the local production of firearms. It saw the establishment of at least three new weapons factories – successively moved to three different locations in and around Lhasa, see **[tab. 1]** at the end of section 3 – and attempts to procure foreign gunnery specialists both from British India and from China in order to locally produce modern weapons that take into account contemporary technological innovations, leading to the manufacture of breech-loading long guns of various types in Tibet.

3.1 Local Production During the First Years of the Thirteenth Dalai Lama's Rule (1895-1903)

The above-mentioned Tibetan accounts describe places where indigenous powder, guns and cannon were produced in Lhasa. Nornang mentions the existence, during his childhood, of an ancient "gunpowder house" (*rdzas khang*) called the "Medicinal spring gunpowder house" (Sman chu rdzas khang) located behind one of Lhasa's three main hills, the Chakpori (Lcags po ri) next to the Potala.[38] Later on, when he was employed at the Army Office (1935-45), this place had become an armoury called the "Medicinal spring armoury" (Sman chu go mdzod), from where gunpowder was brought to produce bullets that were then stored in the Dorjéling armoury (Rdo rje gling go mdzod) **[fig. 4]**.[39]

37 See the translation by Federica Venturi of four significant texts authored by the Thirteenth Dalai Lama and dated 1916, which provide insight into some of the weapons stored at this time in the Ganden Phodrang main armoury, the Dorjéling armoury, comprising arms both produced and imported by Tibetans; these texts manifest the obviously strong interest of the highest Tibetan hierarch in weapons and military technological matters (Venturi, "The Thirteenth Dalai Lama on Warfare").

38 Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 62 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 46). It is not known how long this powder house stood in Lhasa, but with Nornang being born around 1911, his childhood coincides with Charles Bell's mission to Lhasa in 1920-21 when it was photographed and labelled as a "powder magazine at foot of Chakpori used for storing gunpowder"; see **[fig. 4]** in this paper. On the map entitled "Central part of Lhasa" drawn by Zasak J. Taring in 1959 (reproduced in Larsen, Sinding-Larsen, *The Lhasa Atlas*, 30), the exact location of this Medicinal spring or "Menchu" (Sman chu) itself is shown at the north-eastern foot of Chagpori, and just south of the West Gate of Lhasa (Bargo Kani).

39 Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 62 (and Gyaltse Namgyal Wangdue, *Political and Mil-*

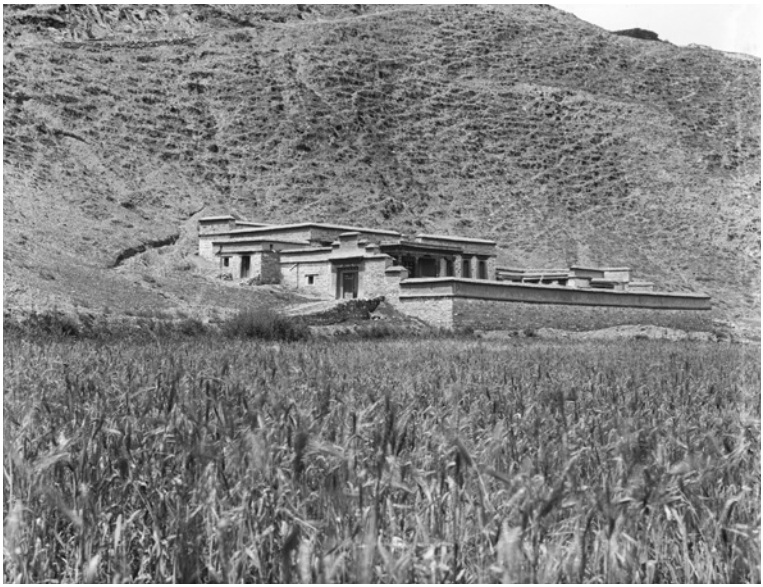

Figure 4 "Chakpori Powder Magazine". Photograph by Rabden Lepcha?, 1920-21, Coll. Sir Charles Bell, PRM 1998.286.47

Taring and Nornang both describe as a first significant step the Thirteenth Dalai Lama's creation of a new weapons factory (*bzo grwa*) near Drip (Grib) monastery and located just outside Lhasa on the southern bank of the Kyichu (Skyid chu) River sometime between 1895 and 1900.[40] The factory is said to have produced ammunition

itary History, 46). On the creation of the Dorjéling armoury under the Fifth Dalai Lama, see Venturi in this issue. Nornang interestingly lists the different "places where weapons were kept" (*go lag 'jog yul*) by the Tibetan government that he himself witnessed in the early twentieth century. Some were located in Lhasa: in addition to the Dorjéling armoury and the Sman chu go mdzod, there were the Dgra 'dul khang in the Potala, the Zhol dngul dpar khang, the Rtse bde yangs shar 'og thog and the Summer Palace (Nor bu gling ka). In the provinces, weapons were stored in the headquarters of the Commissioner of Eastern Tibet (Mdo spyi), of the Commissioner of Western Tibet (Stod sgar dpon) and of the Commissioner of Northern Tibet (Byang spyi), as well as in some monasteries, like Shangs dga' ldan chos 'khor, and in the *bkar khang* (storehouse) of some District headquarters where needed, for instance Lha rtse *rdzong* or Rgyal rtse *rdzong*. He concludes that all these places and any place where the government had to store weapons at some point were considered proper 'armouries' (*go mdzod*); Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 65 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 47).

40 Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 33 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27); Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang

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(*me mdel* or *mde'u*), but most importantly, it manufactured in a large quantity the first Tibetan modern guns (*'phrul mda' / me mda' 'phrul mda'*),[41] one of which had a magazine for thirteen bullets.[42] Among them, one type was called the *grib yang chan*, and is said to have been made after a Chinese model.[43] A number of other firearms produced in Drib and described in these accounts bore Chinese sounding names like *cu rtsi pa'o* and *dbu zhang*.[44] Nothing else is said about this new factory in these Tibetan oral history-based accounts. That the three authors were born in the early years of the twentieth century (Shakabpa in 1907, Taring in 1908 and Nornang in 1911) speaks for a relatively high degree of reliability regarding the facts they present for the late nineteenth and early twentieth century, just one generation before their own. Their narratives turn also to first-hand testimonies for the twenties and onwards. Nevertheless, accounts of this type – based on memory and written decades after the period of time in question – always potentially contain some uncertainties.

The British archives shed some additional and a stronger, though fragmented light on Tibet's early experience with weapons manufacture. The first attempt during the reign of the Thirteenth Dalai Lama is dated July 1896: an intelligence report of the British Resident in Nepal (in an account found in the National Archives of India) describes the "reported arrival of sixteen Muslims [from India, as we

'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 64 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 46).

41 At that time and given the description of the thirteen bullets, the term could designate a bolt-action rifle. As underlined above, this term will later take a new meaning in the twenties as 'automatic weapon', to designate a rifle designed for sustained automatic fire that had either an interchangeable barrel chamber or was magazine-fed.

42 Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 64 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 46).

43 Bla phyag mkhan chung thub bstan bstan pa, "Grwa bzhi glog 'phrul khang", 109.

44 Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 33 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27). The name *cu rtsi pa'o* probably comes from the Chinese *zhujiepao* 竹節炮, for a cannon looking like a bamboo tube (with ring-nodes), which was a very widespread type; and *dbu zhang*, from *buqiang* 步槍, a general Chinese word designating a musket or rifle. I am grateful towards Ulrich Theobald for his help with identifying the Chinese origin of these words. The term *dbu zhang* seems to have been commonly used in Tibet in the early twentieth century for firearms: similar names (*me mda' U-u-shang*, *cu'u shang*, *ru shang*) appear indeed in the list of weapons in the Thirteenth Dalai Lama's texts dated 1916 (Venturi, "The Thirteenth Dalai Lama on Warfare", 490). Interestingly, a gun of seemingly larger size (because they were seized in much smaller quantities) than the usual *me mda'* called *me U shang* still appears amongst weapons seized by Tibetans from Chinese soldiers in the 1950 fightings (cf. Ru dpon bsod nams bkra shis, *Bod dmag gcig gi mi tshe*, 34).

will see below] in Lhasa to set up an arms factory there".[45] It seems to have not turned out well, since another report by the Political Officer in Sikkim dated two years later, in July 1898, records that these gunmakers, under the responsibility of two men named Abdul Aziz and Jamaluddin "had been put in jail on account of the failure of their arms, which were so bad that many of them had burst and the others were not firing straight".[46] Although these two British reports do not give any precise location, their date point to the possibility that this arms factory could be the Drip factory mentioned above. This hypothesis is confirmed by the account of Ekai Kawaguchi, a Japanese monk residing in Lhasa, who brings additional information on the production of firearms at Drip in November 1901, when he met:

> a Tibetan trader with whom [Kawaguchi] had become acquainted at Darjeeling. This man started for Calcutta on Government business to buy iron […]. The iron which he was commissioned to procure was for the purpose of manufacturing small arms at an arsenal situated at Dib near Che-Cho-ling, on the bank of the river Kichu, which flows to the south of Lhasa.
>
> This industry was an innovation in Tibet, and in fact had begun only about eight years before that time.[47] It was introduced by a Tibetan named Lha Tse-ring who had lived for a long time at Darjeeling and, at the request of his Government, brought back with him about ten gunsmiths, mostly Hiṇḍū and Cashmere Mohamedans. Only two of these smiths remained in Tibet at the time I reached Lhasa, the rest having returned home or died; but as several of the Tibetan smiths had acquired the art from them, no inconvenience was experienced in continuing the industry. This was a great improvement on the old state of affairs, for Tibet had formerly possessed only *flint-lock muskets* [emphasis added: erroneous translation; it should read 'matchlock' or 'musket'],[48] and even

45 *Extract from a Semi-Official Letter by Colonel H. Wylie, CSI, Resident in Nepal (to the Assistant Secretary), Dated the 23rd (Received 29th) July 1896* (NAI, Sec. E., October 1896, 100 to 101).

46 *Extract of the Diary of the Political Officer in Sikkim from 10th to 16th January 1898* (NAI, Sec. E., April 1898, 1 to 10).

47 If accurate, this information implies that the creation of the Drip Arsenal dated back to 1892 with the arrival of a first batch of Indian gunsmiths and that the above-mentioned arrival of sixteen Muslims in 1896 was in reality the second batch of gunsmisths.

48 After enquiry, it appears that the term 'flint-lock', used in the English translation of Kawaguchi's book published in 1909, is not correct. In the Japanese original version, Ekai Kawaguchi wrote *hinawajū* (火縄銃) (I would like to thank my colleague Ryosuke Kobayashi in the 'TibArmy' project for having kindly identified the Japanese term for me). According to Markus Sesko (Visiting Researcher, Japanese Arms and Armor, Department of Arms and Armor at the Metropolitan Museum, whom I thank for having

> these could not easily be introduced from India. The manufacture of improved firearms was therefore a great boon to the country, and the Government did not spare expense and trouble to encourage the development of the art. Hence it came about that my acquaintance was authorised by the Government to proceed to Calcutta and procure a supply of iron.[49]

On the situation after 1901, other British archival documents shed light: one of them discloses that in early 1903, three Chinese men were manufacturing weapons in Lhasa for the Tibetan government,[50] which is a further confirmation that modern firearms of the time were produced according to a Chinese model. It is no surprise that the Tibetan government took Chinese, as well as Indian, weapons as models for its own production given the political relationship of Tibet and the Qing Empire at that time, Tibet being a Manchu protectorate and there being a Chinese military garrison in Lhasa.

Two years later in 1905 – after the British defeat of the Tibetan troops in 1904 – a Muslim gun manufacturer (whose country of origin is not given, possibly again from India) is reported in British archives to be back working in Lhasa and producing modern weapons; this time the weapons factory is precisely referred to as the "Dekyiling [Bde skyid gling] firearms factory". The report also adds that blacksmiths had now been engaged and that the Tibetan government hoped to resume manufacturing firearms "by the 5th of this month" [March 1905].[51] There is indeed a place with the name "Dekyiling" shown on a plan drawn by members of the 1904 Younghusband expedition, Major C.H.D. Ryder and Captain H.M. Cowie, which is located just on the southern bank of the Kyichu river.[52] Connected to

provided the following explanation on the meaning and use of this term in Japanese), *hinawajū* means literally a 'gun (*jū*) with a fuse (*hinawa*)' and always designates a matchlock; it is sometimes translated by the more general term 'musket', but it cannot designate a flintlock, for which other Japanese terminology is used.

49 Kawaguchi, *Three Years in Tibet*, 447-8.

50 *Letter from E.H.C. Walsh, Esq., Deputy Commissioner of Darjeeling to the Chief Secretary to the Government of Bengal, Dated the 26th January 1903, Darjeeling: Strength of the Tibetan Army at Lhasa and other towns in Tibet/Pay of the soldiers in Tibet* (NAI, Sec E, April 1903, 1-22).

51 *Frontier Confidential Report no. 17, 20th April 1905, from Charles Bell Assistant Political Agent, Chumbi, to the Political Agent, Sikkim: Number of troops at Lhasa* (NAI, Sec. E, August 1904, 231-46).

52 "Plan of Lhasa, from a Survey by Major C.H.D. Ryder R.E., D.S.O. and Captain H.M. Cowie R.E., 1904" reproduced in Larsen, Sinding-Larsen, *The Lhasa Atlas*, 23: see the caption no. 52 "De-kyi-linga". This place should not be confused with the homonymous place belonging to Kundeling *labrang* where the British Mission was installed after 1936, which is located on the southwestern foot of Chakpori (appearing also on the same 1904 map, under caption no. 5 as "De-Kyi Linga"). Bde skyid gling is a common

the other bank of the city by ferry, this location is confirmed in yet another British map drawn at the same time by Waddell as being an "arsenal".[53] Whether the "Dekyiling factory" quoted in British intelligence and maps for 1904-05 and the "Drip factory" of the Tibetan accounts are identical seems probable, given the striking geographic proximity of the two places on the maps.

British intelligence reports from the eve of the Younghusband expedition are an interesting source on the state of weaponry in Tibet in 1903. Just prior to the expedition, the British were of the opinion that such modern rifles produced in Lhasa were available in great quantity: they wrote that all the troops were "armed with modern pattern rifles made at the Lhasa arsenal" and that "even those Tibetan soldiers who ha[d] their former old pattern guns ha[d] new pattern rifles as well",[54] a statement that might have been partly exaggerated, as we will see below.

In any case, the quality of the local production achieved renown even beyond Tibet's borders: the Bhutanese Dzongpon of Thimphu 'borrowed' one of the two Indian blacksmiths working at the Lhasa arsenal to boost their own local firearms production, after having seen him work in Lhasa in 1903.[55]

However, the most detailed descriptions on the nature of Tibetan troops' firearms and the quality of their locally produced weapons are to be found in the reports actually written during the Younghusband expedition. As will be seen, they display a somewhat ambivalent point of view on the part of the victorious Anglo-Indian soldiers, depending on the witness, expressing both appreciation of the modernity of the equipment and disdain regarding its number, quality and use.

toponym in Tibet and a third location is known by the same name in the Zhol area of Lhasa, designating the Zhol prison.

53 "Sketch map of the Environs of Lhasa" by Waddell, 1905, reproduced in Larsen, Sinding-Larsen, *The Lhasa Atlas*, 24.

54 *Discussion with Phalese, Elder Brother of the Tibetan army Phogpon, Letter from E.H.C. Walsh, Esq., Deputy Commissioner of Darjeeling to the Chief Secretary to the Government of Bengal, Dated the 26th January 1903, Darjeeling: Strength of the Tibetan Army at Lhasa and Other Towns in Tibet/Pay of the Soldiers in Tibet* (NAI, Sec. E, April 1903, 1 to 22).

55 Tshering Tashi, "Muhammadan, *The Muslim Gunsmith of Bhutan*". I am grateful to Tshering Tashi for sharing this unpublished paper with me. Tshering Tashi is of the opinion that the Indian Muslim came from Kashmir, Srinagar being well-known for its gunsmiths.

Figure 5 Example of a Martini-Henry rifle (breechloader): Martini-Henry MK.1.

3.2 The 'Test of Fire' During the Younghusband Expedition and the Subsequent Modernisation of Weapons Manufacture Under the Qing Aegis (1903-11)

Published and unpublished reports by Anglo-Indian members of the 'Tibet Mission Force', composed of several units (23rd and 32nd Sikh Pioneers, the eighth Gurkha Rifles, the Northfolk Maxim detachment), describe the Tibetan army fighting with a variety of modern rifles (among which were breechloading rifles, both single-shot and bolt-action repeaters), either produced in Lhasa or imported (about which more will be said in the following section), as well as traditional matchlocks and swords.[56] The diversity of the Tibetan fighters' equipment seems to have mainly depended on the nature of the combatants. The Younghusband expedition indeed fought partly against regular troops and military officers of the Tibetan government but also against regional levies usually referred to as the 'militia' and volunteers.[57] While the latter fought only with old matchlocks and swords,[58] the regular Tibetan soldiers were equipped with the modern firearms mentioned above. According to reports by members of the expedition, the gunsmiths at the arsenal were producing good copies of the British Martini-Henry rifle (see **[fig. 5]**), a regulation military weapon, which were lethal at a range of over 1,200 yards (although effective range, even fired *en masse*, was around 700 yards):[59]

56 See in particular the accounts and references to firearms quoted in the present paper and those found in the books published by Candler, Landon, Waddell, Rahul (reproducing the *32nd Sikh Pioneers Regimental History*), Younghusband (Coates, *The British Invasion of Tibet*), and Ottley, *With Mounted Infantry in Tibet*. I am grateful to Donald La Rocca for pointing out the last two sources to me.

57 To give an example, during the 5 May 1904 attack on the British camp at Gyantse, the Tibetan troops comprised 1,600 soldiers of the regular regiments of Gyantse and Shigatse, supplemented by militia (Waddell, *Lhasa and Its Mysteries*, 382).

58 Landon, *Lhasa*, vol. 1, 145.

59 Waddell, *Lhasa and Its Mysteries*, 383. The Martini-Henry was a breech-loading single-shot lever-actuated rifle, with a 'tilting bolt' mechanism, in service in the Brit-

> A large number of modern rifles of Lhasa manufacture were found at Guru. These are of the old Martini pattern, and are made at Lhasa by two Mohammedan artisans from India, who have been engaged for over ten years in the arsenal of the sacred city. They have, it seems, been making periodical visits to Calcutta and smuggling back the necessary materials. Some of these rifles they have made are fairly well finished with back-sights, and they throw bullets over three-quarters of a mile or more. Their cartridge-cases are formed by spirally twisted brass plate. Altogether, these weapons are of fairly modern pattern and are not to be despised.[60]

Younghusband's account in August 1903 reports that the British were informed from a reliable source on the field that the Tibetan army had been issued 2,000 rifles manufactured at Lhasa (1,000 for the Lhasa command and 500 each to the Phari and Shigatse command).[61] According to the historian Ram Rahul, these modern small arms "were an enormous improvement on the old swords, spears, flint-lock [*sic*] muskets, and muzzle-loading matchlocks".[62] Rahul quotes from the memoir of one soldier from the 32nd Sikh Pioneers Regiment who fought on the British side in 1904 and wrote in 1905: "the range and severity of the fire developed by the enemy left little doubt of his being in possession of a large number of breech-loaders, and of his understanding how to use them with telling effect".[63] However, some reports convey some level of disdain. Younghusband heard from a trusted informant that the locally produced rifles were "of the gas-pipe order [i.e. cheaply made]" and that "several of them had burst at practice".[64] Edmund Candler also wrote:

> Soon after they had disappeared another group of horsemen were seen riding towards us. These proved to be the Lhasa Depon [*mda' dpon*, i.e. General], accompanied by an influential Lama and a small escort armed with modern rifles. The rifles were naturally inspected with great interest. They were of different patterns–Martini-Henry [tilting block type], Lee-Metford [bolt-action type],

ish army from 1871 to 1918, when it was replaced by the Lee-Metford (bolt-action) rifle. See also Fowler et al., *The Illustrated World Encyclopedia of Guns*, 282.

60 Waddell, *Lhasa and Its Mysteries*, 269.

61 Coates, *The British Invasion of Tibet*, 88, 93, 101.

62 Rahul, *The Government and Politics of Tibet*, 68.

63 Rahul, *The Government and Politics of Tibet*, 68 quoting "Sikkim and Tibet, 1903-1904". *32nd Sikh Pioneers Regimental History*. London, 1905, vol. 2, 33-4.

64 Coates, *The British Invasion of Tibet*, 96.

> Snider,[65] – but the clumsily-painted stocks alone were enough to show that they were shoddy weapons of native manufacture. They left no mark on our troops.[66]

The subsequent defeat of the Tibetan troops when faced with the firepower of the British expedition showed the Tibetans (and their Manchu overlord) that the firearms modernisation efforts made in the last decade had not been sufficient, not only in terms of quantity (hence the great number of old matchlocks still in use at that time) but also quality. This was the second time within a short period that Tibet was defeated by British India because of the technological (as well as structural) inferiority of their military, the first time being the 1888 first Tibeto-English war on the border with Sikkim.[67] In the exact same way that the First Opium war (1839-42) had revealed to Qing China their military backwardness compared to European countries and opened the way for subsequent reforms after the Second Opium War (1856-60),[68] Tibet's two successive defeats by the British, only 50 years later after China's, served as a catalyst for Tibet to attempt to modernise its military firepower.

After the Younghusband expedition, during the last years of the Sino-Manchu Empire and thus of the Sino-Manchu protectorate over Tibet, new steps were taken to ramp up local production, as part of a larger plan of modernising the Tibetan army which was launched by the Sino-Manchu authorities in Lhasa in 1906-07.[69] This larger Qing plan, as reported in British archives, included the creation of a military college, the raising of more troops, and the training of Tibetan troops by instructors hired in China, Japan, etc.;[70] the sources also

65 The Snider was a pivoting block conversion of the muzzle-loading Enfield rifle. It was approved for British service in 1864 and so predates both the Martini and Metford rifles (I am grateful to Jonathan Ferguson for providing this information). It was replaced by the Martini-Henry in the British army in 1871, see Fowler et al., *The Illustrated World Encyclopedia of Guns*, 282.

66 Candler, *The Unveiling of Lhasa*, 102.

67 On which see Stoddard, "The Great '*Phi gling dmag zlog*' of 1888".

68 Andrade, *The Gunpowder Age*, 257-96.

69 Ryosuke Kobayashi has shown that in the wake of the British invasion of Lhasa in 1904 and to increase the Qing's military presence in Tibet, the *amban* Zhang Yintang (1860-1935) implemented military reforms in Tibet, in particular aimed at strengthening Tibetan forces through military training, education, and conscription. Provision with modern firearms such as Gatling guns and mountain guns is quoted as part of Zhang Yintang's plan (Kobayashi, "Zhang Yintang's Military Reforms", 317), but it remains uncertain whether this aspect was implemented and if Gatling guns, one of the first hand-driven machine guns invented by an American in 1862, were eventually brought to Tibet.

70 *Extract from a Letter from the Resident in Nepal, no. 92, Dated the 10th July 1908: Proposed Establishment of a Military College in Tibet* (NAI, Sec. E, September 1908, 113-34).

detail the subsequent arrival of several drill instructors, two known by name, Hsü and Wu, who were trained in Japan,[71] as well as one Japanese drill instructor,[72] and the creation of a Tibetan police force dressed in Japanese uniform.[73] Last, they document the help provided then by the Qing to improve local weapons manufacture: British accounts from February 1908 state that gunsmiths were reported to be coming from China to Lhasa to work in the Arsenal.[74]

One Tibetan archive document reproduced in a recent publication also bears witness to the efforts made by the Tibetan and Sino-Manchu authorities to regulate the manufacture of firearms and ammunition. This document dated the ninth day of the 2nd month of the Iron Dog year (1910)[75] forbids, by order of the Qing Emperor transmitted through the *amban*, Tibetan subjects (*mnga' khongs mi ser*) from privately manufacturing (*bzo*) military equipment (*dgra chas*) such as cannons (*me sgyogs*) and guns (*me mda'*) or from possessing military equipment (*dmag mi'i dgra chas nyar tshags*). Anyone found to be in violation of this law was to be severely punished. The problem of the shortage of weapons, which will remain a recurrent one, becomes apparent in this document.

71 *Frontier Confidential Report no. 88, from Captain W.L. Campbell, British Trade Agent, Yatung to the Political Officer of Sikkim* (NAI, Sec. E, September 1908, 113-34).

72 *Newsletters Regarding Affairs in Tibet, Dated the 14th November 1908, Gangtok, from C.A. Bell, Political Officer of Sikkim to the Deputy Secretary to the Government of India in the Foreign Department: Report Regarding the Presence of a Japanese Drill Instructor in Lhasa* (NAI, Sec. E, February 1909, 671-3).

73 *Frontier Confidential Report no. 88, from Captain W.L. Campbell, British Trade Agent, Yatung to the Political Officer of Sikkim* (NAI, Sec. E, September 1908, 113-34). To understand how the Sino-Manchu reforms implemented in Tibet at the time were inspired by the Japanese military model, see Kobayashi, "Zhang Yintang's Military Reforms".

74 *Proposed Establishment of a Military College in Tibet, Extract from a Letter from the Resident in Nepal, no. 92, Dated the 10th July 1908* (NAI, Sec. E, September 1908, 113-34, 123); *Importation of Arms into Lhasa, 1908* (NAI, Extl, May 1908, 108-10, Part B).

75 A facsimile of the document is published as document 157, *Qingdai Xizang difang dang'an wenxian xuanbian*, Xizang Zizhiqu dang'an guanbian. Beijing: Zhongguo Zangxue chubanshe, 2017, vol. 1, 577 and vol. 3, 732. I have included a Tibetan transliteration of the document as an appendix to this paper (Appendix 2).

3.3 The Rise of a New Enemy on the Eastern Border and the Creation of a New Factory (1912-30)

After the expulsion of the last Sino-Manchu representatives and soldiers from Tibet in 1912 following the end of the Qing dynasty in China, Tibetans continued to produce cannons, small arms, and ammunition on their own: two successive new arsenals were created by the Thirteenth Dalai Lama, who had been very impressed by the arsenals he had visited during his exile in India (precipitated by Chao Erfeng's 1910 invasion of Lhasa). The new need that arose – to be able to defend the country militarily against Chinese incursions – urged on efforts to further modernise weapons production,[76] and the chosen place for this to happen seems to have been related to the former Chinese *amban* quarters.

Tibetan sources provide individual elements of the picture surrounding the opening of the first new firearms factory. According to Shakabpa, a factory (*'phrul bzo khang*) that produced weapons and money was founded in a place called Métok kyitsel (Me tog skyid tshal, also referred to as Me skyid, lit. 'flower garden').[77] Another Tibetan account records Métok kyitsel as the new name given to the old Drip factory (*bzo grwa*) after the latter was shifted to the Lugu (Klu sgug khul [or Klu sbug])[78] area in Lhasa.[79] A third Tibetan account gives the exact year, stating that a so-called "Yamön factory" (Ya mon 'phrul bzo khang) was established in 1914 and headed by two officials recorded as *mkhan drung ta'a bla ma* and Bhum pa *sras*; it produced modern firearms called *'phrul mda' yang chang* (probably designating a type of breech-loading long gun, like a bolt-ac-

76 Bla phyag mkhan chung thub bstan bstan pa, "Grwa bzhi glog 'phrul khang", 98.

77 The exact date of its foundation is not recorded but chronologically it appears to be between the departure of the Sino-Manchu residing in Lhasa (i.e. 1911) and 1915; Shakabpa, *One Hundred Thousand Moons*, 804, 821; Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 271, 296.

78 According to Dung dkar, over time Klu sgug came to be pronounced and written Klu sbug; the place is described as being located "between the Chakpori and the Jokhang" (Dung dkar, *Tshig mdzod chen mo*, 122). It is alternatively described as a "meadow south of Potala", famous for the annual State ceremony held there called the "preparation of the camp at Lubu" (Klu sbug sgar sgrigs); see Richardson, *Ceremonies of the Lhasa Year*, 130.

79 Bla phyag mkhan chung thub bstan bstan pa, "Grwa bzhi glog 'phrul khang", 108 and Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 64 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 46). It was probably erroneously spelled Mi skyid 'phrul bzo khang, in Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 64 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 46) and thus falsely translated as "Joyful Machine Factory" in the English version of the book.

tion rifle),[80] along with small cannon on wheels, cannon balls, gunpowder, long and short swords and lances.[81] The weapons factories known as Métok kyitsel and the one located in either Lugu or Yamön are most probably one and the same, as both places are given the identical location in the southwestern part of Lhasa centre (formed by the Jokhang), just south of the Turquoise Bridge (*g.yu thog zam pa*). Moreover, British sources dating from this entire period consistently refer to only one arsenal in Lhasa.[82]

The set of photos of the "Lhasa Arsenal" dated 1920-21 and kept in the Charles Bell (1870-1945) collection (**[figs 6-7-8]** in this paper), has visibly been taken from that very area of Lhasa.[83] In 1920, this arms factory apparently merged with another factory known as Norbu tsokyil (Nor bu mtsho dkyil or Nor dkyil) which had been established previously in Yatung (Dromo) and was specialised in the production of copper and silver plates and coins.[84] Last but not least, one photograph dated 1924 testifies to the fact that the "Lhasa arsenal" was still associated with the Yamön area at that time.[85]

80 Interestingly, it appears that Tibetans (though not necessarily the Tibetan army) were using bolt-action rifles, equipped with traditional prong-rests (see the 1926 photograph taken by Joseph Rock in Rock, *Lamas, Princes, and Brigands*, fig. 4.9, also reproduced in Tashi Tsering Josayma in this issue). The other men in this photo appear to be carrying traditional matchlock muskets. I am grateful towards Donald La Rocca for having pointed that particular type of weapon to me.

81 Bshad sgra, Chab tshom, Sreg shing, "Ya mon 'phrul bzo khang", 70.

82 For instance, we read in British archives that in 1916, "the Tibetans still continue to manufacture cartridges, and cannon balls, at the Lhasa Arsenal. [...] A Tibetan blacksmith named 'Tsering Dorje' has manufactured a cannon, and is now receiving a salary of Rs. 80 per month from the Tibetan Government", cf. *Yatung Trade Agency News Report no. 3 of 1916, September 1916* (NAI, Sec. E. April 1917, 77-157).

83 This is particularly apparent when one looks at the photograph (not reproduced here but available online) entitled "View of the Potala Taken from the Arsenal's Roof" (*Tibet Album*, PRM 1998.285.78, Charles Bell Collection).

84 Bshad sgra, Chab tshom, Sreg shing, "Ya mon 'phrul bzo khang", 70. See also Shakabpa, *One Hundred Thousand Moons*, 804; Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 271. The date of the merging seems unclear as the Norbu Tsokyil Mint seems to have still existed in 1924 when Tsarong visited it (Tsarong, *In the Service of His Country*, 74). It must be noted here that one part of Taring's account has not been considered in this regard and must be regarded as erroneous following comparison with all other sources. Indeed, Taring states that the Drip factory moved to the Lhasa Yamön even before the Younghusband expedition, with its name changed to Nor dkyil 'phrul bzo khang, and was then closed in 1904; Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 33 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27). Except for the Drip factory's move to Yamön, the rest is very unlikely, first in terms of chronology (this arsenal is not found on any maps of Lhasa drawn during the 'Tibet mission') and second regarding the name (in the two above-mentioned sources Nor dkyil 'phrul bzo khang corresponds to the factory located in Yatung, which had nothing to do with weapons manufacture).

85 See the caption of a photo not reproduced here taken by Frederick Marshman Bailey "Yamon area, Yamen Arsenal [Lhasa]. Making rifles" (British Library, Bailey collection, Photo 1083/76(26): 26 Jul. 1924).

In any case, the scale of production in this new arsenal remained insufficient. Charles Bell underlines the shortage of firearms in Tibet at that time (around 1914-18) and adds:

> Now that Britain was occupied in the world war, the Chinese were preparing to attack Tibet more vigorously. Accordingly, the little Tibetan arsenal in Lhasa had to strain every nerve to make as many cartridges as it could. It was in the charge of a capable priest [either the above-mentioned *mkhan drung ta'a bla ma* who would have remained in charge since 1914 or another monk official (*rste drung*)], and though of course, the cartridges were of mediocre quality, still they did the best they could.[86]

The absence of electricity in Lhasa proved a significant handicap. At a time when Tibet had started to rely mainly on British India for support in the modernisation of the country and its army, the Tibetan government had sent four boys to England in 1914 to receive education and training in several technical fields, including electrical engineering.[87] In July 1918, five Tibetan mechanics were also sent to British India to learn how to produce weapons. However, after they visited an arsenal in Calcutta which was powered by electricity, it was decided that the training was pointless since there was no electricity in Lhasa and the British thought that they also lacked the technical skills to benefit from such a training; they were recalled to Tibet.[88] At this time the situation was particularly critical because the cartridges (*rdzas mdel*) produced by the Tibetans were damaging the newly imported British rifles, as we will see in the second part.

Therefore, the construction of the first hydroelectric power station in Tibet, in the Dodé valley (Dog bde/sde) north of Lhasa and east of Sera (Se ra) monastery, which began in 1924 under the supervision of the aristocrat official Ringang/Jangngö Rindzin Dorjé (Rin sgang/

86 Bell, *Portrait of a Dalai Lama*, 210-1. A photo taken at that time also documents the dissimilar size of the bore in the cannon produced in this arsenal: "Small cannon manufactured at Lhasa Arsenal. The bores are not uniform" (photo 1112/2(40), by C.A. Bell, 1920-21, British Library). Later in the same book, Bell is quite critical of the locally produced firearms, without precisely noting the period he is writing about (though the details he gives about its location seem to concern the old Drip factory rather than the later Me skyid / Ya smon / Klu sbug arsenal): "[Tibetans'] rifles and ammunition were poor, having been mostly manufactured in primitive workshops a few miles outside Lhasa, where an Indian was in charge"; Bell, *Portrait of a Dalai Lama*, 249.

87 On this episode, see Goldstein, *A History of Modern Tibet*, 158-9; Bla phyag mkhan chung thub bstan bstan pa, "Grwa bzhi glog 'phrul khang", 98.

88 *Abandonment of the Scheme for the Training in India of Tibetan Mechanics in the Manufacture of Arms* (NAI, Sec. E, July 1918, 1 to 6).

Figure 6 "The Arsenal in Lhasa". Photograph by Rabden Lepcha?, 1920-01, Coll. Sir Charles Bell, PRM 1998.286.46, probably being the Métok kyitsel arsenal located in the Lugu or Yamön area

Figure 7 "Blacksmiths at Lhasa Arsenal". Photograph by Rabden Lepcha?, 1920-01, Coll. Sir Charles Bell, PRM 1998.285.186.1

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Figure 8 "Cannon at Lhasa Arsenal". Photograph by Rabden Lepcha?, 1920-21, Coll. Sir Charles Bell, PRM 1998.286.48

Byang ngos rig 'dzin rdo rje),[89] one of the four young men trained in England, was a much-awaited improvement not only for the progressive electrification of Lhasa but also for local industry, including weaponry. One Tibetan archive document[90] seems to indicate that, for a while at least, ammunition might have been manufactured directly in Dodé.[91] Just a few years later, the most significant and long-lasting improvement regarding Tibetan weapons manufacturing would be based on the energy generated by the Dodé power plant.

89 Bshad sgra, Chab tshom, Sreg shing, "Glog 'don khang", 72; see also Goldstein, *A History of Modern Tibet*, 152.

90 A facsimile of the document is published as document 157, *Qingdai Xizang difang dang'an wenxian xuanbian*, Xizang Zizhiqu dang'an guanbian. Beijing: Zhongguo Zangue chubanshe, 2017, vol. 1, 158 and vol. 3, 720. I have included a transliteration as Appendix 3 of this paper. In this document, a Tibetan named Tamdrin, who was usually selling ammunition at a place named 'Ong stod zhing khar, reports an incident in which he had apparently accidently fired his rifle. He had bought the cartridges (*U shang mde'u*) from a "monk from Drepung or Sera" (*ser 'bras kyi grwa rigs 'dra ba zhig*). He describes these "Tibetan made cartridges" (*bod bzos mde'u*) has having been manufactured by a worker at the Dodé factory (*rdo sde'i* [*sic* i.e. *dog bde/sde'i*] *bzo pa*). Interestingly we also hear about the current market price of ammunition (nine cartridges were sold to Tamdrin for 7.5 *zho*).

91 If it indeed was, it must have been only for a short while as the descriptions of the various offices of the Tibetan government do not mention it; Bshad sgra, Chab tshom, Sreg shing, "De snga'i bod sa gnas srid gzhung gi srid 'dzin sgrig gzhi", 1-101.

3.4 The First Hydroelectric Powered Weapons Factory in Trapchi (1931-50)

The last major effort towards improving and upscaling firearms manufacture during the Thirteenth Dalai Lama's rule was the creation of the hydroelectric-powered Trapchi factory (Grwa bzhi glog 'phrul khang).[92] Begun in 1927 and inaugurated in 1931, the complex included not only the weapons factory, but also the mint (*gser Tam las khung*), the paper money printing office (*lor khang*) and the barracks of a new elite regiment (*grong drag dmag sgar*) of the Tibetan army.[93] The complex was placed under the joint responsibility of Künpela (Kun 'phel lags, 1905-1963) and Tsarong (Tsha rong zla bzang dgra 'dul, 1888-1959). Its history and organisation are described in detail by Lachak Khenchung Tupten Tenpa (Bla phyag mkhan chung thub bstan bstan pa), who was appointed as an ordinary monk official in Trapchi in 1946.[94] Previously existing factories including the former weapons factory *ya mon 'phrul bzo khang* – relocated into the new compound.[95] Thus, the new weapons factory with electrically powered machines was clearly considered a continuation of the Métok kyitsel weapons factory located on the former site of Yamön/Lubug – implying that activities there stopped.[96] A new armoury was

92 Bshad sgra, Chab tshom, Sreg shing, "Grwa bzhi glog phrul las khungs", 71. On the creation of Grwa bzhi glog 'phrul las khungs, see also Shakabpa, *One Hundred Thousand Moons*, 821 and Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 296; see also Goldstein's pages on the rise of Künpela until 1933, which is directly related to Trapchi's history (Goldstein, *A History of Modern Tibet*, 151-5); Tsarong, *In the Service of His Country*, 84 and the article by Wolfgang Bertsch (Bertsch, "Tibetische Münzstätte Trabshi Lekhung").

93 Bla phyag mkhan chung thub bstan bstan pa, "Grwa bzhi glog 'phrul khang", 98. Trapchi was already the place of a functioning arsenal in 1927 according to one British record quoted by Goldstein (*A History of Modern Tibet*, 123 fn. 66).

94 Bla phyag mkhan chung thub bstan bstan pa, "Grwa bzhi glog 'phrul khang", 115. See his account also for the names of the successive officials in charge of Trapchi.

95 According to Bshad sgra, Chab tshom, Sreg shing, "Grwa bzhi glog phrul las khungs", 72.

96 In Nornang's account, the former "Métok kyitsel" arms factory is said to have been transferred to the new Trapchi arms factory upon its foundation, which supports the idea that the "Yamön factory" presented by Bshad sgra, Chab tshom, Sreg shing (see footnote above) as Trapchi's precursor and the Métok kyitsel factory were one and the same; see Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 64-5. NB: The English translation of this book has the former Métok kyitsel factory erroneously located in Drip "the Miki Factory at Drip" (Gyaltse Namgyal Wangdue, *Political and Military History*, 47), but this is an error as there is no mention of Drip in the Tibetan version of the book in this particular passage. On Trapchi being the continuation of the former weapons factory, see also the description by Wolfgang Bertsch, and its assessment that the Trapchi arsenal dates back to 1914: "Trabshi Lekhung [...] wurde ursprünglich unter Mitwirkung des indischen Technikers Ismael im Jahre 1914 als Fabrik für die Produktion von Waffen und Munition für die tibetische Armee eingerichtet" (Bertsch, "Tibetische Münzstätte Trabshi Lekhung"). Since there is absolutely no doubt about the fact that the location of Trap-

also founded on the compound to store the new machine guns acquired from the British.[97] The main innovation at that time consisted in making copies of the British Short Magazine Lee-Enfield (*dbyin mda' kha dum / kha thung*, lit. 'British short barrel long gun') that had been imported from India in 1922, as will be discussed in part 4 of this paper, as well as ammunition,[98] new artillery and shells.[99] However, Federica Venturi has underlined how unsuccessful this new attempt at producing Lee-Enfield rifles and their ammunition was: "The bullets made in Tibet did not work well and actually turned themselves 90° during their trajectory, thus hitting flat on their target"; the British gunsmiths consulted in India to evaluate the reasons for this failure apparently listed twenty-seven different manufacturing mistakes in the gun and advised to halt gun production altogether.[100] The ammunition manufactured at the arsenal for new guns caused too many accidents[101] to be used and Tibetans remained heavily dependent on ammunition purchased from the British.

Thus, despite all efforts made by the Tibetan government from 1895 up to 1950 to improve the quality and increase the quantity of their local firearms production, including the creation of at least three successive weapons factories (see **[tab. 1]**), the results proved insufficient in the end. While the Tibetan government never stopped producing guns and ammunition in order to ensure a minimum level of self-sufficiency, as soon as diplomatic relations with British India allowed it, so from 1914 onwards, the Tibetan government increasingly relied on imports to equip its army.

chi was chosen for the weapons factory only in 1927 and opened in 1931; Bertsch's assessment, if not inaccurate, can be understood only if one considers the Trapchi weapons factory as the continuation of the one opened in 1914 in Yamon/Lubug with the help of Indian gunsmiths, with the welcome additional information of the personal name of the gunnery specialist "Ismael".

97 Bla phyag mkhan chung thub bstan bstan pa, "Grwa bzhi glog 'phrul khang", 114. It became the main government armoury, with the Dorjéling armoury located in the Zhol area below the Potala being integrated into the new Trapchi armoury; Tsarong, *In the Service of His Country*, 84.

98 Also according to Bshad sgra, Chab tshom, Sreg shing, "Grwa bzhi glog phrul las khungs", 72.

99 Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 65 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 47).

100 Venturi, "The Thirteenth Dalai Lama on Warfare", 489.

101 Goldstein, *A History of Modern Tibet*, 281.

Table 1 Gunpowder and weapons factories in and around Lhasa (1896-1950)

Name of arms and ammunition factories	Location	Date
Sman chu rdzas khang	Northeast of the Chakpori	extant c. 1915
Grib bzo grwa = Bde skyid gling firearm factory?	Southeastern bank of the Kyichu near Grib monastery	started around 1892-5, still extant c. 1905
Me tog skyid tshal (Me skyid) 'phrul bzo khang?	Lhasa Ya smon / Klu sbug area (southwestern part of Lhasa, just south of the Yutok bridge)	started in 1914/1915, extant in 1924
Grwa bzhi glog 'phrul khang	Grwa bzhi (north of Lhasa)	started c. 1931

4 Fortunes and Misfortunes of Firearms Imports and Tibetan Diplomacy

From the late nineteenth century on, historical sources bear witness to the extent of the Tibetan government's efforts to import weapons and thereby compensate for the insufficient quality of their local firearms production. The import of weapons always raises a number of issues. The main two that shall be examined here are, on the one hand, the intrinsic dependency on good diplomatic relationships with the exporting countries – which cannot be underestimated when one considers that Tibet experienced probably its most intense period of isolation during the second half of the nineteenth century – and on the other hand, the challenge that new imported weapons posed in regard to their use, namely the acquisition of continually advancing technical skills and the level of general education that the transfer of such specialised knowledge required.

4.1 Imports from a Variety of Countries Before 1914

Before 1914, foreign-made firearms and ammunition entered Tibet initially only in very modest quantities, having been either seized in battle, received as diplomatic gifts,[102] or purchased. They were im-

102 These gifts are documented in many forms. For instance, on the British side, on 20 March 1905, the first British Trade Agent at Gyantse, W.F. O'Connor, received a note of thanks from the Prime Minister of the Panchen Lama *bla brang* in Shigatse and the Panchen Lama's uncle for the two guns he had offered them, cf. *Diary Kept by W.F. O'Connor, British Trade Agent, Gyantse, for the Week Ending the 26th March 1905, to the Secretary to the Government of India in the Foreign Department* (IOR/L/P&S/7/178/P102). One undated Tibetan archive document, possibly related to the same gift exchange or to a later gift, and kept in the collections of the Institut d'Études tibétaines at the Collège de France in Paris (IET Ms. 3), is a letter addressed by the Ninth Panchen Lama (1883-1937) to "F.W. [*sic*] Colonel O'Connor Sahib CIE" (*e pha Dab lu ka nel e ko nor sa heb si a'i i*), to

ported from various countries, mainly from Russia, Mongolia, China, Japan and British India.[103] Russian weapons were imported into Tibet, a fact presented as an additional reason for the British to launch the Younghusband expedition in 1903, but never *en masse*. To give examples of the quantities involved: prior to this military expedition, Kawaguchi reported the arrival of a camel-caravan bringing small American-made firearms and ammunition from Russia in spring 1902;[104] during the expedition, at the famous battlefield of Guru (Sgu ru) the British seized only two breech-loaders of Russian make used by Tibetan troops;[105] Ottley mentions only a "few Russian rifles" taken from the Tibetans;[106] shortly thereafter, in 1905, the British reported that a Mongolian had brought around thirty rifles to the Tibetan government, which were handed over to Séchung (Sras chung) Minister;[107] and in 1907, the Thirteenth Dalai Lama, then in exile in Mongolia, sent 200 Russian rifles to Lhasa, which were tried

"thank him for the firearm and the cartridges that were sent and received in good state" (*me mda' mde'u rang 'grig bcas nyams med gnang 'byor byung ba thugs rje che*). I am grateful to Françoise Wang-Toutain for having pointed out this document to me. More generally on gifts in the context of Anglo-Tibetan diplomatic exchange, and the fact that they always included weapons, see Emma Martin, oral communication "Material Histories of Diplomacy. Tracing Tibetan Gift Giving in the Imperial Archive", 6 June 2019, SFEMT, Paris; Martin, *Fit for a King*, 91. On the Japanese side of gift exchanges, Shakabpa documents one gift of "several modern guns" (*'phrul mda' thon gsar*) presented in 1908 by the Japanese ambassador in Beijing, Lieutenant General Yasumasa Fukushima, to the Thirteenth Dalai Lama, cf. Shakabpa, *One Hundred Thousand Moons*, 694, 710 fn. 34; Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 146. Note that the use of the term "machine gun" for the Tibetan *'phrul mda'* in the English translation of Shakabpa's work is possibly an anachronism (in this case Shakabpa certainly meant only modern rifles).

103 There is one visual testimony (not reproduced here) of a gun made in Czechoslovakia that found its way to Tibet in 1938 and was called by Tibetans the "Parmerly", cf. photograph "George Tsarong shooting a gun during return journey to Lhasa from Darjeeling school" (Photo F2-69, Tsarong private collection). While the weapons of the Tibetan government and its army were mostly of British origin, aristocrats in Lhasa had mostly weapons of Chinese and Russian origin, Anonymous interview, Lhasa, 6 August 2014.

104 Kawaguchi, *Three Years in Tibet*, 505: "I had the opportunity to inspect one of the guns sent by Russia. It was apparently one of modern pattern, but it did not impress me as possessing any long range nor seem to be quite fit for active service. The stock bore an inscription attesting that it was made in the United States of America. The Tibetans being ignorant of Roman letters and English firmly believed that all the weapons were made in Russia. It seems that about one-half of the load of the five hundred camels consisted of small arms and ammunition". This explanation by Kawaguchi might provide a reason why the British seized so few firearms "of Russian make" in Tibet during the Younghusband expedition. However, British sources do not mention the seizing of any American firearms either.

105 See Shakabpa, *One Hundred Thousand Moons*, 682.

106 Ottley, *With Mounted Infantry in Tibet*, 72.

107 *Diary of Captain W.F. O'Connor, CIE, British Trade Agent at Gyantse, for the Week Ending the 6th August 1905* (IOR/L/P&S/7/180/P1465).

out in front of the cabinet ministers Yutok (G.yu thog) and Séchung.[108] Candler has a quite informative passage on the origins of the firearms seized from Tibetan soldiers in 1904, which succinctly sums up the situation regarding both local production and imports, especially from Russia:

> This last encounter with the Tibetans is especially interesting, as they were the best-armed body of men we had met. The weapons we captured included a Winchester rifle, several Lhasa-made Martinis, a bolt rifle of an old Austrian pattern, an English-made muzzle-loading rifle, a 12-bore breech-loading shot-gun, some Eley's ammunition, and an English gun-case. The reports of Russian arms found in Tibet have been very much exaggerated. During the whole campaign we did not come across more than thirty Russian Government rifles, and these were weapons that must have drifted into Tibet from Mongolia, just as rifles of British pattern found their way over the Indian frontier into Lhasa. Also, it must be remembered that the weapons locally made in Lhasa were of British pattern, and manufactured by experts decoyed from a British factory. Had these men been Russian subjects, we should have regarded their presence in Lhasa as an unquestionable proof of Muscovite assistance. Jealousy and suspicion make nations wilfully blind. Russia fully believes that we are giving underhand assistance to the Japanese, and many Englishmen, who are unbiased in other questions, are ready to believe, without the slightest proof, that Russia has been supplying Tibet with arms and generals. We had been informed that large quantities of Russian rifles had been introduced into the country, and it was rumoured that the Tibetans were reserving these for the defence of Lhasa itself. But it is hardly credible that they should have sent levies against us armed with their obsolete matchlocks when they were well supplied with weapons of a modern pattern. Russian intrigue was active in Lhasa, but it had not gone so far as open armament.[109]

Chinese cannons and rifles started to be imported in larger quantities just before the fall of the Manchu dynasty in 1911: for instance, on 28 February 1908, British intelligence reports the arrival in Lhasa of 500 rifles and carbines[110] from China; another consignment arrived on 17 March 1908, followed on 26 June 1908 by "7,000 rifles

108 *Gyantse Dairy of Lieut. Bailey, Officiating British Trade Agent at Gyantse, for the Week Ending the 5th October 1907* (IOR/L/P&S/7/207/1965).

109 Candler, *The Unveiling of Lhasa*, 221-2.

110 The main difference between a rifle and a carbine is in the length of the barrel; a carbine's is shorter.

and large quantities of ammunition".[111]

In August 1912, according to Shakabpa, the Tibetan government seized from the Qing garrison in Lhasa – before the latter was sent back to China – 840 magazine rifles (*mdel lcags shubs can gyi me mda' ring po*, lit. 'a long rifle possessing a metal magazine for bullets') **[fig. 9]**,[112] 160 *rkang gsum can gyi me mda'* (lit. 'three feet firearm', which could designate the Tibetan matchlock or 'prong gun',[113] or rather a 'firearm with a tripod',[114] which would then designate a modern type of firearm), 90 *jingals* (*'jin 'gal zhes pa'i med mda'*) and, last, four *me mda' sbag sbag*.[115] These would certainly be the first machine guns mentioned in Tibet. However, their exact nature is not clarified by the Tibetan terminology in Shakabpa's work, nor in Derek Maher's English translation.[116] Shakabpa further writes that according to a copy of the original agreement, all "Chinese machine guns" (*rgya mi'i sbag sbag*),[117] Lewis guns ((*mi shin 'gan*) *lu si 'gan*),[118] and all battle equipment (*g.yul mkho'i yo chas*) were to be entrusted to the custody of the Tibetan government.[119] Last, Shakabpa again recounts,

111 *Importation of Arms into Lhasa, 1908* (NAI, Extl, May 1908, 108 to 110, Part B); *Extract from a Letter from the Resident in Nepal, no. 92, Dated the 10th July 1908* (NAI, Sec. E, September 1908, 113-34, 123).

112 The seizing of these firearms is documented by one piece of photographic evidence.

113 This is how Derek Maher translates the phrase, cf. Shakabpa, *One Hundred Thousand Moons*, 745. If this hypothesis is followed, it would document the continued use of matchlocks by Qing troops in Tibet up to 1912, along with more modern firearms.

114 The phrase *rkang gsum can gyi me mda'* is not documented elsewhere in Tibetan sources as meaning a matchlock musket with its two prongs and one would rather think of more modern types of firearms that are indeed mounted on a tripod. For instance, there were certain types of Maxim guns existing by that time that were mounted on a tripod. However, the high number of *rkang gsum can gyi me mda'* seized seems to speak in favour of a small arm rather than an artillery piece.

115 Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 212.

116 In the English version (Shakabpa, *One Hundred Thousand Moons*, 745-6), the translator Derek Maher interprets this last category of weapons (*me mda' sbag sbag*) as meaning Maxim guns, which seems doubtful because later sources do not mention the Tibetan government being in possession of these cannons. In addition, the Tibetan word usually designates a lighter type of machine guns.

117 Derek Maher interprets the two occurrences of the word *sbag sbag* as meaning precisely "Maxim gun" in his English translation (Shakabpa, *One Hundred Thousand Moons*, 745-6) and includes again "Maxim gun" in a last passage where only *me shin 'gan* is used in the original Tibetan. However, both the onomatopoeic word *sbag sbag* and the phonetic rendering *me shin 'gan* usually means only the generic category 'machine gun'.

118 The Lewis gun is a First World War–era light machine gun of American design that was perfected and mass-produced in the United Kingdom, and widely used by troops of the British Empire during the First World War. Weighing only around 12 kg, half as much as the Vickers that were later imported to Tibet, they were the first weapons capable of sustaining continuous fire to reach Tibet. Lewis guns were later imported to Tibet from British India (see **[fig. 12]**).

119 Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 213. I have proposed my own translations as Derek Maher's departs too much from the original Tibetan; in addition

Figure 9 "Chinese and arms captured by Tibetans, 1910-11". Henry Martin, Henry Martin Collection, The Pitt Rivers Museum, UK, PRM 1998-293-133

regarding the same episode, that the Tibetan government stored the weapons seized from the Chinese including "rifles (*me mda'*), machine guns (*me shin 'gan*) and Lewis guns (*lu se 'gan*)".[120] What happened to these first generation machine guns is not entirely clear, as they are not quoted in other sources after 1912[121] and the import, much later, of Lewis guns from British India would then be presented as an additional innovation. In any case, after the end of the Chinese protectorate in Tibet, it was thanks to the new rapprochement with British India that a new chapter in firearms import began.

4.2 The Benefits and Limits of Tibetan Dependency on British India for Firearms Imports (1914-47)

It was indeed from the Raj that the Tibetan government imported weapons in the greatest quantities and over the longest period of time (see my compilation of data from Goldstein and other sources in **[tab. 2]**). However, these imports were irregular and consistently deficient in view of the requests placed by the Tibetan government,

to his interpretation of Maxim guns, he omits twice to mention the "Lewis guns" in his translation (Shakabpa, *One Hundred Thousand Moons*, 746).

120 Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 214.

121 Machine guns and Lewis guns are not explicitly part of the 1916 list of modern weapons kept in the Dorjéling armoury, quoted in Venturi, "The Thirteenth Dalai Lama on Warfare".

as Goldstein has clearly shown.[122] Earlier sources reveal that just after the 1903-04 Younghusband expedition, the British had repeatedly refused to sell weapons and ammunition to the Tibetan government for its army, and that, besides the above-mentioned diplomatic gifts of weapons, only a few religious leaders and Tibetan officials managed to buy ammunition from the British for their private use.[123]

Table 2 Imports from the British Government of India and India into Tibet from 1914 to 1950[124]

1914	1921-33	1934-41	1943-50
5,000 Lee Metford rifles (.303)	10,000 Short Magazine Lee-Enfield rifles (.303)		1,260 rifles (.303)
	20 Lewis guns	10 Lewis guns	
	10 mountain guns (ten-pounders)	4 mountain guns	
	20 machine guns	5 Vickers machine guns	144 Bren guns (plus 150 in 1950?)
		3 practice machine guns	168 Sten guns
			42 Very pistols (flare guns)
			Ordnance BL 2.75-inch mountain gun
			Howitzer (Tib. *ha'o dzar*)
			3-inch and 2-inch mortars

Tibetan autobiographies and research in other British archives shed further light on the chronology of imports and use of the various firearms

122 Goldstein, *A History of Modern Tibet*. For a summary of the various stages in importing firearms from the British, see **[tab. 2]**.

123 *Arms* (NAI, Extl, January 1908, 96 to 100, Part B).

124 Based on data collected in Goldstein, *A History of Modern Tibet*, 120, 402, 619, 634, 662 as well as in other English archives and in Tibetan sources for the last three artillery piece types. The Ordnance BL 2.75-inch mountain gun is referred to in British archives as being used for training in Gyantse and in Lhasa in 1943 (cf. *Lhasa Letter for the Week Ending 13th June 1943 from Major Sheriff, Additional Assistant, Political Officer of Sikkim, Officer in Charge, British Mission, Lhasa*, IOR L/P&S/12/4201), as we will see later, and thus was most probably imported from British India. The purchase of a Howitzer is referred to in Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 64 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 46); its use in Lhasa in 1947 is reported in Goldstein, *A History of Modern Tibet*, 498. The fact that the Government of India agreed in 1950 to import 3-inch and 2-inch mortars is referred to in Goldstein, *A History of Modern Tibet*, 662, and their actual use in Tibet is referred to in Nornang's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 64 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 46).

Figure 10 Example of a British Lee-Metford Rifle Mk II, .303 caliber (1895). From the collections of the Armémuseum (Swedish Army Museum), Stockholm, Sweden (CC BY 4.0)

as well as on the Tibetan terminology. As stated, the weapons imports from British India started only in 1914, after the Simla Conference, with the initial sale of 5,000 Lee–Metford rifles[125] (see **[fig. 10]**) taking .303 cartridges, of which 500,000 were also sold.[126] These rifles were called in Tibetan *dbyin mda' kha ring*,[127] lit. 'British long barrel long gun'.[128]

125 The Lee-Metford rifle was a bolt-action British army service rifle produced by the Royal Small Arms Factory of Enfield, and named after the two engineers who designed it: James Paris Lee (responsible for the rear-locking bolt system and detachable magazine) and William Ellis Metford (for the seven-groove rifled barrel). Replacing the Martini-Henry rifle in 1888, it was phased out by the Lee-Enfield rifle, which was of nearly identical design but took smokeless powder cartridges, beginning already in 1895. See Fowler et al., *The Illustrated World Encyclopedia of Guns*, 284. The Lee-Metford rifle was still in British use during the Second Boer War in 1899, and it was also the main firearm used by the Anglo-Indian soldiers of the 'Tibet Mission Force' in 1903-04. It had already been almost entirely replaced in the British army by 1914, when 5,000 such rifles were sold to the Tibetan government.

126 Goldstein, *A History of Modern Tibet*, 77; Jamyang Norbu, "Centennial of a Historic Tibetan Victory". Though Goldstein indicates precisely that these first weapons were *sold* to the Tibetan government, Shakabpa presents it as a "good-faith *gift* from the British government" (Shakabpa, *One Hundred Thousand Moons*, 775, emphasis added) / *legs skyes phyag rtags su 'bul* (Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 243).

127 Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 33 (and Gyaltse Namgyal Wangdue, *Political and Military History*, 27). Please note that the English translation places the sale in the same paragraph immediately following a sentence on the 1903-04 Younghusband expedition; however, in the Tibetan version, the sale of 5,000 British rifles to the Tibetans starts a new paragraph and is introduced by the words "later on" (*rjes la*).

128 The qualifier "British" was all the more needed since the term *me mda' ka* [*sic*] *ring* had already been in use in Tibetan for a long time to designate the old Tibetan matchlock. See for instance its occurrence in the biography of the Sixth Dalai Lama

Thanks to these new imports, and the small local production, it can be safely stated that the regular small arm of the permanent troops of the Ganden Phodrang army became, at some point after 1914, entirely composed of modern rifles, and not anymore in a portion, as it was the case in 1903-04.[129]

At the time, the Tibetans had no modern cannon, mountain guns or machine guns (except possibly for the few heavy Maxim guns mentioned above) and asked the British to sell them these items as well; the British refused, citing their own current firearms shortage during the First World War.[130] After the war was over, in 1919, the British refused again, this time because they did not wish to make Tibet too strong vis-à-vis China and support their move towards complete independence.[131] Nonetheless, the Tibetan troops' victory over Chinese troops in Kham and the signing of the Rongbatsa (Rong ba rtse) Truce in 1918 was largely attributed to these first 5,000 new modern rifles supplied by the British to the Tibetan government in 1914.[132]

It is only from 1921 onwards, at the height of Anglo-Tibetan diplomatic relations, and because the British Government of India feared that Tibet would otherwise turn to Japan to import weapons,[133] that the British finally agreed to sell another consignment of firearms to Tibet, this time comprising 10,000 Short Magazine Lee-Enfield[134] (*dbyin mda' kha thung / dbyin mda' kha dum / dbyin mda' kha 'dum*, lit. 'British short barrel long gun',[135] see **[fig. 11]**), as well as the first

for the year 1693, Sde srid sangs rgyas rgya mtsho, *Sku phreng drug pa'i rnam thar rnam thar*, 206.

129 If the use of the old Tibetan matchlock (*bod mda'*) in the Tibetan military thus came to an end, it remained common for the hunting and private usage for decades, especially in Tibetan nomadic areas. The nomadic pastoralists in Phala (Pha lha) on the Changtang area still used it for hunting in the eighties. Cf. Goldstein, *Nomads of Western Tibet*, 124.

130 Goldstein, *A History of Modern Tibet*, 78.

131 Goldstein, *A History of Modern Tibet*, 78.

132 Goldstein, *A History of Modern Tibet*, 83.

133 Facing the constant British refusal to sell them weapons, in 1921 the Tibetan Government had indeed arranged to import Japanese rifles and machine guns from Mongolia (Japan was helping Mongolia against the Bolsheviks), see Goldstein, *A History of Modern Tibet*, 252, 349-50.

134 The Short Magazine Lee-Enfield is a bolt-action, magazine-fed repeating rifle that replaced the Lee-Metford, becoming the standard rifle used by the military forces of the British Empire and Commonwealth from 1895 to 1957. Its name derives from the bolt-action designed by James Paris Lee and its place of manufacture, the Royal Small Arms Factory in Enfield.

135 From here, all the different orthographic variations of Tibetan names and transcriptions found in the autobiographies listed in the bibliography are given after the English name of each firearm.

Figure 11 Example of a British short magazine Lee-Enfield Mk I (1903), .303 caliber. From the collections of the Armémuseum (Swedish Army Museum), Stockholm, Sweden (CC BY 4.0)

Figure 12 Soldiers shooting a recently imported Lewis gun during training by the British at Gyantse, under the supervision of four standing Tibetan officers, left to right Changchen *gung*, Doring *téji dapön*, Tsogo *rupön*, and Rong Démön *rupön*. Photograph by H.R.C. Meade, 1922, Royal Geographical Society, PR/073238

Figure 13 Demonstration of a Vickers gun in Lhasa: "Soldiers demonstrating military drill at a review of troops held in September 1936 at which Brigadier Philip Neame inspected the Tibetan Army". Photograph by Brigadier Nepean, 1936. © The Trustees of the British Museum, Asset number 577936001, CC BY-NC-SA 4.0

Figure 14 Demonstration of a mountain gun in Lhasa: "Military review at Trapchi". Photograph by Frederick Spencer Chapman, 7 September 1936, PRM 1998.131.506. The *Tibet Album* contains a description of this image which mentions that Chapman's handwritten caption for this photograph has "V. [vickers] gun going off". However, the image does not show a Vickers gun, but a mountain gun

Lewis guns (*lu'u si ghan* / *lu'u sin ghan* / *lu yi si ghan*, see **[fig. 12]**),[136] mountain guns (*me sgyogs*, **[fig. 14]**)[137] and ammunition.[138] British archives reveal that the aristocrat Surkhang (Zur khang *sras*) was sent to Kalimpong in 1922 to buy them and bring them back to Lhasa.[139]

The internal political crisis in Tibet in 1924 (which caused the Thirteenth Dalai Lama to temporarily halt military modernisation) and the crisis in diplomatic relations with the British initially slowed down[140] and then entirely stopped British imports and training for a few years until these activities resumed in 1931. The year 1932 saw the very significant purchase of the first machine guns[141] (*me shin gun* / *mi shin ghan* / *meg sin ghan* / *sbag sbag*) to Tibet. While arms and ammunition imports continued in 1932[142] and 1933,[143] they again almost stopped after the Thirteenth Dalai Lama's death in 1933 and during the Réting (Rwa sgreng) regency (1934-41): only eight machine guns, i.e. five Vickers (see **[fig. 13]**) and three drill practice guns, some of them never unpacked, ten Lewis guns and four mountain guns were purchased.[144]

136 If we except those seized from the Chinese garrison in 1912 and of which nothing is heard in the later accounts on the Tibetan army. For a study of the episode shown on fig. 12, see Travers, "L'entraînement de l'armée tibétaine".

137 These were most probably the ten-pounder mountain gun (*kran phon po kran* / *me sgyogs kran pa 'on krar*), which was first demonstrated to the Lhasa population in 1924 (Tsarong, *In the Service of His Country*, 73) and was still in use in the Tibetan army in the thirties and fourties, see § 4.3 in this paper on the training of soldiers.

138 Goldstein, *A History of Modern Tibet*, 120.

139 *Annual Report on the British Trade Agency at Yatung for the year 1921-1922 (for the Year Ending the 31st March 1922) dated the 18th April 1922, Gangtok, from the Political Officer in Sikkim (Major F.M. Bailey) to the Government of India in the Foreign and Political Department, Simla* (IOR/L/P&S/10/218/P2134).

140 The conveyance of munitions to Lhasa by the assistant to the Tibetan Trade Agent in Yatung is still reported in 1927, cf. *Annual Report on the BTA, Yatung, Tibet for the Year Ending the 31st March 1928* (IOR/L/P&S/12/4166/P2445).

141 A machine gun is a fully automatic (i.e. it fires as long as the trigger is held, contrary to semi-automatic firearms which require one trigger pull per round fired) mounted or portable firearm. Tibetan autobiographies usually designate as 'machine guns' the later Bren light machine gun and sometimes the Sten submachine gun, but not the earlier Lewis machine gun. However, as we have seen, Shakabpa uses retrospectively the terms *me shin gun* to explicitly designate the Lewis gun (Zhwa sgab pa, *Bod kyi srid don rgyal rabs*, vol. 2, 212-4), and *sbag sbag* to possibly designate their predecessor, the Maxim gun.

142 British reports record for 1932: "Consignments of Arms and Ammunition purchased by Tibetan Government from the Government of India, passed through Gyantse in September and November. Mipon Dingja [*mi dpon* Sding bya] was at Kalimpong seeing to the forwarding arrangements", cf. *Annual Report on the British Trade Agent, Gyantse, Tibet for the Year Ending the 31st March 1934* (IOR/L/P&S/12/4166/P3566).

143 In 1933, British reports record: "Considerable quantities of ammunition purchased from the Government of India was brought up during 1933 under the charge of Kunsang-tse [Kun bzang rtse], 6th rank official", cf. *Annual Report on the BTA, Gyantse, Tibet for the Year Ending the 31st March 1934* (IOR/L/P&S/12/4166/P3566).

144 Goldstein, *A History of Modern Tibet*, 402.

Brigadier Neame visited Lhasa in 1936 to inspect the Tibetan troops, and his subsequent report informs us that by then all Tibetan troops were equipped with Enfield rifles and plenty of ammunition, each regiment had a Lewis gun[145] and the whole army disposed of ten or twelve British mountain guns in addition to a few taken from the Chinese troops. However, as recounted by Goldstein, Neame's account was also a testimony of the troop's general lack of training and the shortage of ammunition, which in particular prohibited troops from practicing target shooting.[146] An exact and critical picture of the state of the Tibetan army's firearm equipment in 1936 based on a conversation between Brigadier Neame and the Tibetan Commander-in-chief is reported in the British Mission Diary for 31 August 1936:

> The numbers and condition of weapons is roughly as follows. There are four British mountain guns in Kham […]. There are six good Lewis guns in Kham, one with each of six regiments. There are some 5,000 good .303 rifles (for MK VII ammunition), in the hands of regulars. The militia there have a proportion of old .303 rifles (MK VI ammunition), and the remainder a very mixed lot of foreign or ancient Tibetan guns. There are six mountain guns in Lhasa, but two are condemned as useless, two are deficient of some parts and rather dangerous to fire! Two are in good order. These are 6 M. Gs. [i.e. 'machine guns'] at Lhasa of which only four are in good order. These are being used to train 300 machine gunners who when trained will be sent to Kham to those regiments on whose fidelity or staunchness the Government can rely (apparently only about half of the regular regiments are trustworthy). There are two good Lewis guns in Lhasa. The Bodyguard has 500 modern rifles and about 4,000 new rifles are in stores. One grave trouble is that the troops little care of their weapons and seldom clean them.[147]

Though Neame, supported by Basil Gould, then Political Officer in Sikkim, recommended the purchase of new weapons, the Foreign and Political Department of the Government of India in Delhi refused to allow it, for fear of encouraging the Lhasa government to "undertake adventures on the Tibetan Chinese frontier".[148] Further efforts to outfit the Tibetan army with modern firearms continued after this visit, namely the import of the first light machine guns, Bren guns. Tibet-

145 A famous photograph of the "Tibetan Lewis Gun Section" taken by F.S. Chapman in 1937 is available in the *Tibet Album*, PRM 1998.131.505, F.S. Chapman collection.

146 "The Tibetan army in 1936", Goldstein, *A History of Modern Tibet*, 280-4.

147 *Lhasa Mission diary by Brigadier Neame dated 31st August 1936*, Appendix to part IV (IOR/L/P&S/12/4193).

148 Goldstein, *A History of Modern Tibet*, 286-7.

Figure 15 Example of a Bren gun: BREN Mark 2 gas operated/tilting bolt machine gun, manufactured by Enfield, UK. Copyright Board of Trustees of The Royal Armouries, Leeds

Figure 16 Example of a Sten gun: Mk.II centrefire automatic submachine gun, about 1943, Britain. Copyright Board of Trustees of The Royal Armouries, Leeds

an autobiographies first mention the use of Bren guns[149] (see [fig. 15]) (*sbi ran ghan* / *bhi reng ghan*) in the early forties.[150]

At the same time, the first submachine guns,[151] Sten guns (see [fig. 16])[152] (*krin ghan* / *kran ghan* / *spring ghan*), were imported and used in the Tibetan army. More generally, the period from 1943 to 1950 under Regent Taktra (Stag brag, r. 1941-50) saw the resumption of regular British imports, in light of the increasing threat on the Chi-

149 The Bren gun is a series of light machine or automatic rifles that is magazine-fed, has a changeable barrel, and was used by the British army from 1937. See Fowler et al., *The Illustrated World Encyclopedia of Guns*, 332-3.

150 See the mention of their use, as well as of Sten guns, by the Tibetan army in Kham around 1941 in Ru dpon bsod nams bkra shis, *Bod dmag gcig gi mi tshe*, 27.

151 A submachine gun is a handheld, lightweight machine gun that fires pistol cartridges. Developed during the First World War, submachine gun use peaked during the Second World War.

152 The Sten gun is a British-made lightweight 'machine carbine' (British English) or 'submachine gun' (American English) that fired 9 mm cartridges and was well suited to short-range combat. Sten guns could be manufactured quickly and cheaply and they were used extensively by British and Commonwealth troops from the Second World War until they were successively withdrawn from service in the sixties. See Fowler et al., *The Illustrated World Encyclopedia of Guns*, 76-7.

nese border. Stocks of ammunition were very low in 1943 and when the Tibetan government tried to purchase ammunition, the British Raj again at first used the Second World War as an argument for limiting their exports. In 1943, the British Government of India finally consented to selling five million rounds of rifle ammunition and 1,000 shells for mountain guns, but no ammunition for the Lewis and machine guns. The purchase of various modern artillery pieces and all kinds of modern firearms available then followed. In 1944, more weapons were imported from British India and delivered to the Tibetan government from the British Mission in Lhasa.[153] As before, the British policy was to sell the Tibetans just enough to keep their army going but not more.[154]

Later on, independent India agreed to continue such exports under the same guiding principle of limited quantities. In 1947, 144 Bren guns, 168 Sten guns, 1,260,303 rifles and 42 Very pistols (i.e. flare guns)[155] (but not the mortars or anti-aircraft guns that had been requested) were allowed to be purchased by Tibet.[156] In the fall of 1949, the Government of India agreed to sell more ammunition but refused to sell more guns despite Tibet's insistent requests. In 1950, the sale of more Bren guns, mortars and ammunition was allowed, but due to transportation difficulties (a shortage of mules), the exact number of weapons that actually reached Tibet remains unclear.[157] The Tibetans then turned to the American government in hope of buying more weapons but without success, as transportation would have required Indian approval, which was denied.[158]

The former officer Gyaltse Namgyal Wangdue details the distribution of firearms (*go mtshon thob stsal*) within each unit of 250 men (*ru khag* or *ru shog*) for all regiments, at a period he designates as "later times"[159] (*phyis su*), probably referring to the last period of the Tibetan army in 1950. This overall picture shows the progress in supplying troops with modern weapons that had been made since Neame's visit in 1936. According to Gyaltse Namgyal Wangdue, at that time, all higher-ranking officers in a unit of 250 soldiers had submachine guns, and the lower-ranking officers and soldiers had only what he

153 *Lhasa Letter for the Week Ending the 29th October 1944 from the Additional Assistant, Political Officer in Sikkim, Officer in Charge, British Mission, Lhasa* (IOR/L/P&S/12/4201).

154 See also Goldstein, *A History of Modern Tibet*, 404.

155 Named after its inventor Edward Wilson Very, it is a single-shot, large-bore handgun designed to fire flares (Very lights) as a signal or for illumination.

156 Goldstein, *A History of Modern Tibet*, 619.

157 Goldstein, *A History of Modern Tibet*, 662.

158 Goldstein, *A History of Modern Tibet*, 620.

159 Rgyal rtse nam rgyal dbang 'dud [*sic*], *Dmag gi lo rgyus rags bsdus*, 30.

calls "hand guns"[160] (*lag mda'*) (the use of this term could be understood as a type of pistol or side arm, however it seems that the author could actually mean rifles; see **[tab. 3]** enumerating the troops' equipment a few years later by a Chinese author named Khreng ping in which long arms – *mda' ring* – are explicitly mentioned as the weapon issued to basic soldiers); in addition each unit had three squads of soldiers equipped respectively with submachine guns, Bren guns, and full-size machine guns, and two squads of soldiers equipped respectively with two-inch or three-inch mortars:

> The thirteen higher officers (i.e. the *ru dpon* [head of the whole unit of 250 soldiers], the *brgya dpon* [head of 100 to 125 soldiers] and the *lding dpon* [head of twenty-five soldiers]), each had a submachine gun (*sab mi shin ghan*); all subaltern officers (i.e. the ten *lding tshab* and *dge che*, the twenty *bcu dpon*), each had a side arm (*lag mda'*); the twenty soldiers and instructors of the Bren gun (*bhi rin ghan*) squad had ten Bren gun and ten pistols; the five soldiers and instructors of the machine gun (*mi shin ghan*) squad had one machine gun and one gun; the ten soldiers of the three-inch mortar (*thi ri in ci mo kror*) squad had two three-inch mortars and two guns; the eighteen soldiers of the two-inch mortar (*kru'u in ci mo kror*) squad had six two-inch mortars and six guns; the twenty instructors and players of the music band (*bha dung*) each had a gun; the ten men who did various tasks in the military camp (*dkyil sgar khongs las rigs*), each had a side arm.[161]

Another, but later, account of the precise firepower of the six remaining regiments of the Tibetan army, based on an examination of the troops by the Chinese authorities in 1958 (see **[tab. 3]**), confirms overall the above-mentioned distribution of weapons in the core regiments of the Tibetan army (six regiments) during the final years of its existence.[162] Even if this source pertains to a later period, it gives an idea of the probable repartition of weapons in former years and shows that the army was equipped with modern weapons, though the most modern ones seem to have been limited to officers and a few squads.

160 Rgyal rtse nam rgyal dbang 'dud [*sic*], *Dmag gi lo rgyus rags bsdus*, 30.

161 This passage appears only in the first version of his book dated 1976 (Rgyal rtse rnam rgyal dbang 'dud [*sic*], *Dmag gi lo rgyus rags bsdus*, 30-1), but is not included in the later edition published by the Association of Tibetan Veterans (Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*). If not otherwise stated, the translations were made by the Author.

162 Khreng ping, "Bod dmag gi lo rgyus mdor bsdus", 187. The regiments were named after the alphabetic order, with the first regiment, the Bodyguard, called the "Ka dang dmag sgar", the second regiment called the "Kha dang dmag sgar", also known as the "Trapchi Regiment", the third was the "Ga dang dmag sgar", etc.

Table 3 Firearms of the six regiments remaining in 1958 according to Khreng ping[163]

Regiment's (*dmag sgar*) name	**General's (*mda' dpon*) name**	**Number of soldiers and officers**	**Number and type of weapons**				
			mda' ring [rifle]	*krin kann* [Sten gun]	*sbi rings kan* [Bren gun]	*mi shin kan* [machine gun]	*me sgyogs* [cannon]
Ka dang [i.e. Bodyguard]	Stag lha Phun tshogs bkra shis	645 (of which 32 officers)	600	200	46	4	8
Kha dang [i.e. Trapchi]	Bkras dpal rdo rje tse brtan Bsam pho Bstan 'dzin don grub	1,023 (of which 56 officers)	900	50	56	4	22
Ga dang	Nu ma mi 'gyur rdo rje	570 (of which 41 officers)	1,000	32	20	4	14
Nga dang	Mdo mkhar Bsod nams stobs rgyas	489 (of which 27 officers)	500	15	10	1	0
Ca dang	Brag 'jun	120 (of which 5 officers)	500				
Ja dang	'Jun pa Ngag dbang dpal mo	357 (of which 20 officers)	300	1	10	0	4

To sum up the history of weapon imports during this period, one sees that modern firearms could be procured only from 1914, and in higher quantities from 1921 onwards. With the exception of the first batch in 1914, which were already somewhat outdated, subsequently imported weapons progressively reflected the highest standards of modern firearms available at the time. For instance, while the firearms used during the First World War in British India (the Lewis, the Vickers) were imported to Tibet respectively only in the twenties and thirties, due to the 'delayed' start of imports from British India to Tibet, those used during the Second World War (the Bren, the Sten) rapidly found their way to Tibet.[164] The Tibetan government thus managed to some degree to keep pace with the rapid technological progress in firepower in the rest of the world, to the effect that Tibetan troops were armed in the late fourties with some of the most modern firearms of the day. However, the strategy was only partially suc-

163 This table is a translation of a table included in Khreng ping, "Bod dmag gi lo rgyus mdor bsdus", 187.

164 Following detailed scrutiny of the nature of imported firearms up to 1950, Goldstein's assessment of the situation in 1944 that "normally they sold old and out-of-date weaponry, and even that in pitifully small amounts" (Goldstein, *A History of Modern Tibet*, 403) seems in fact to be more accurate for its second part regarding the quantities and less accurate regarding the age and condition of the firearms sold.

cessful, since these imports did not meet the quantities required to equip the majority of the troops, but only the officers and particular 'squads', leaving the remaining majority of soldiers armed only with the old Enfield rifles through the end of the period under scrutiny. The rhythm of transactions also shows how highly dependent imports were not only on Tibetan internal political changes but also on British and then Indian diplomacy, these two partners consistently limiting their exports for diplomatic reasons in calculation of China, without entirely fulfilling Tibet's demands for weapons.

4.3 Knowledge Transfer around New Firearms. Organisation of Troops' Training

Given the rapid pace with which these new firearms were introduced to Tibet between 1914 and 1950, training Tibetan troops in their use and maintenance represented a strategic aspect for the Tibetan government during the whole period under scrutiny. In this point Tibetans were again dependent on the British (from whom these weapons were purchased), and on the amount of ammunition sold to them, which seems to have been chronically insufficient to allow for proper training. The chronology of training appears to directly parallel the chronology of the firearm imports detailed above. After the initial acquisition of 5,000 British rifles in 1914, two Tibetan officers, Drumpa *dzasak* (Brum pa *dza sag*) and Doring *téji* (Rdo ring *tha'i ji*) along with fifty soldiers of the Bodyguard regiment were trained in military drills by the Indian escort of the British Trade Agent in Gyantse (Rgyal rtse) in 1915. [165]

In the early twenties, the British undertook the most significant training of Tibetan troops in the use of these newly imported weapons both in Tibet and in India. During 1922 and 1923, a total of 350 soldiers and four officers of the Tibetan army – with the rank of General or *dapön* (*mda' dpon*) or Colonel or *rupön* (*ru dpon*) – were trained locally in Gyantse (Tibet) by the British in the use of the rifles and the Lewis guns acquired in 1921: 100 soldiers and three officers – Changchen *gung* (Lcang can *gung*), the above-mentioned Doring *téji* and *rupön* Démön (*ru dpon* Bde smon) – were trained under the leadership of Captain Parker and the Indian escort in the spring of 1922;[166] Parker's personal archive and a set of photographs taken

165 Tsarong, *In the Service of His Country*, 49. On the military training of Doring *téji*, aged 15, in Gyantse in 1915, see also Bell, *The People of Tibet*, 91-2. Upon their return to Lhasa, these two officers immediately trained the soldiers newly recruited by Tsarong, *In the Service of His Country*, 49.

166 *Annual Report on the British Trade Agency at Gyantse for the Year 1921-1922 (for the Year Ending the 31st March 1922) Dated the 18th April 1922, Gangtok from the Po-*

by H.R.C. Meade in Gyantse in 1922 (see **[fig. 12]**)[167] record that the training was still going on in August with a fourth officer participating, probably Tsogo *rupön* (Mtsho sgo *ru dpon*), who is described in British archives as having undergone training in Gyantse with the three other officers and 250 soldiers in 1922-23 under the command of Parker's successor, Captain G.B. Williams.[168]

Training was also organised in British India, in Quetta (Tib. Ko Ta, now in Pakistan) for four Tibetan officers and their soldiers in 1922 and 1926: two officers, Sampo *téji* (Bsam grub pho brang *tha'i ji*) and Dingja *kusho* (Lding bya *sku zhabs*) from October 1922 to May 1923, and twenty soldiers were to be trained in "big gun drill";[169] two other officers, Norgyé Nangpa (Nor rgyas nang pa) and Yutok Tashi Döndrup (G.yu thog bkra shis don grub) and soldiers were to be trained in artillery for eight months in 1925-26 (an episode after which we learn that some of the soldiers suffered from malaria and were treated in Kalimpong hospital).[170] Others were trained in Shilling (Shillong). However, their return coincided with a time when the Thirteenth Dalai Lama entertained suspicion against the military establishment in Tibet and the British were astonished at the fact that the two officials last trained were not afterwards appointed to posi-

litical Officer in Sikkim to the Government of India in the Foreign and Political Department, Simla (IOR/L/P&S/10/218/P2135).

167 For a study of that particular episode, based on Meade's photographs and Parker's archive, see Travers, "L'entraînement de l'armée tibétaine".

168 *Annual Report on the British Trade Agency at Gyantse for the Year 1922-1923 (for the Year Ending the 31st March 1923) Dated the 27th April 1923, Gangtok, from the Political Officer in Sikkim to the Government of India in the Foreign and Political Department, Simla* (IOR/L/P&S/10/218/P2120). Goldstein concluded to slightly different but comparable figures (Goldstein, *A History of Modern Tibet*, 120-1).

169 *Transmits Copy of Despatch from British Trade Agent at Yatung Reporting on Appointments etc. among Officials from D. Macdonald, British Trade Agent, Gyantse, Tibet to the Deputy Secretary to the Government of India in the Foreign and Political Department, Delhi, Dated the 12th April 1923, Gyantse* (FO/371/9186); *Copy of a Confidential Letter Dated the 26th May 1923, Yatung, from British Trade Agent Dated the 10th July 1923* (FO/371/9187); *Annual Report on the British Trade Agency at Gyantse for the Year 1922-1923 (for the Year Ending the 31st March 1923) Dated the 27th April 1923, Gangtok, from the Political Officer in Sikkim to the Government of India in the Foreign and Political Department, Simla* (IOR/L/P&S/10/218/P2120). See also Goldstein, *A History of Modern Tibet*, 121.

170 *Annual Report on the British Trade Agent, Gyantse, Tibet for the Year Ending the 31st March 1926* (IOR/L/P&S/12/4166/P2080); *News Report from the Political Officer in Sikkim, from Williamson, Political Officer, Sikkim, to Foreign Secretary to the Government of India, Dated the 8th November 1926, Gangtok* (FO/371/11680); *Annual Report of the British Trade Agency, Gyantse, for the Year Ending the 31st March 1927, Dated the 13th March 1927, Gyantse, from A.J. Hopkinson, British Trade Agent, Gyantse and Assistant to the Political Officer in Sikkim* (FO/371/12510). Yutok Tashi Döndrup's wife briefly mentions her husband's year of training in the company of *ru dpon* Bsod nams bkra shis in his biography, cf. G.yu thog, *Yab gzhis g.yu thog*, 13.

tions involving the supervision of troops.[171]

The next British training followed the 1932 purchase of the first machine guns to arrive in Tibet: Yutok Tashi Döndrup and twenty-five soldiers of the Bodyguard regiment were trained in these new weapons in Gyantse by Captain W.D. Marshall of the "1/5th Mahratta Light Infantry" from August to December 1932.[172] Taring Jikmé Sumtsen (the above-mentioned author of the history of weapons in Tibet) served as his translator and received training as well. After the training they returned to Lhasa and performed a complimentary parade in Norbulingka before a reportedly "very enthusiastic" Thirteenth Dalai Lama.[173] Yutok and Taring became the commanding officers of the new elite regiment created by Künpela.[174]

The passing of the Thirteenth Dalai Lama resulted in a stop to the military modernisation plan, and when Brigadier Neame visited Lhasa in 1936, his assessment of the troops was very negative, particularly pointing out their lack of training, despite possessing a number of modern weapons.[175] The subsequent plan proposed by Gould and Neame, to offer more intense weapons training (and sell more weapons) to the Tibetans was turned down by the Foreign and Political Department of the Government of India.[176] However, after a pause during its first years, Taktra's regency was marked by the renewed training of troops from 1943 onwards.[177] A new British drill instructor, Lieutenant Sendall, trained Tibetan officers and troops in the use of the Ordnance BL 2.75-inch mountain gun **[fig. 18]**[178] in both Gyantse and Lhasa in January and February 1944.[179]

171 *Annual Report of the British Trade Agency, Gyantse, for the Year Ending the 31st March 1927, Dated the 13th March 1927, Gyantse, from A.J. Hopkinson, British Trade Agent, Gyantse and Assistant to the Political Officer in Sikkim* (FO/371/12510).

172 *Annual Report on the British Trade Agent, Gyantse, Tibet for the Year Ending the 31st March 1934* (IOR/L/P&S/12/4166/P3566); *Report on a Visit to Lhasa in 1933, Letter from F. Williamson, Political Officer in Sikkim, Dated the 6th January 1934, Gangtok* (FO/371/20221).

173 *Annual Report on the British Trade Agency, Gyantse, Tibet for the Year Ending the 31st March 1934* (IOR/L/P&S/12/4166/P3566).

174 Goldstein, *A History of Modern Tibet*, 152.

175 Goldstein, *A History of Modern Tibet*, 284.

176 Goldstein, *A History of Modern Tibet*, 286-7.

177 Goldstein, *A History of Modern Tibet*, 403.

178 The Ordnance BL 2.75-inch mountain gun is a screw gun (i.e. an artillery piece consisting of a breech piece that is screwed into the barrel for loading) designed for and used by the Indian Mountain Artillery into the First World War; it replaced the ten-pounder mountain gun and in the British Army was itself superseded by the Howitzer.

179 The two officers who received gunnery course were Horkhang *se* (Hor khang *sras*) and Kharnawa (Khar na ba) *rupön*, cf. *Gyantse News Report for the Period Ending the 25th January 1944, from Assistant Political Officer, Gyantse, Tibet* (IOR/L/P&S/12/4208/P880); *Lhasa Letter for the Week Ending the 23rd January 1944 de Major G. Sheriff, Ad-*

After Indian independence, the Indian escort continued to train Tibetan troops in Gyantse, for instance in 1948.[180] In August 1950, the Tibetan government decided to send for training not only military officers and soldiers, but government officials as well. The then Indian (previously British) Political Officer in Lhasa, Hugh Richardson, observed: "Twenty young monk officials and twenty young lay officials are receiving training at Lhasa in the use of Bren guns. Military training for monk officials is an innovation. The trainees are said to be enthusiastic and able".[181]

Reading Tibetan soldiers' and officers' biographies offers an insight into the way in which the Tibetan government organised and tried to maximise the diffusion of technical knowledge. These accounts shed light on what a pivotal role the Bodyguard regiment (*ka dang sku srung dmag sgar*) played. Throughout the entire first half of the twentieth century, the regiment remained the showcase regiment of the Tibetan army; its officers were the first to be trained by the British in Gyantse in 1915, and later on a large number of its members were sent to Gyantse and/or India to be trained in the use of artillery. According to both British archives and several autobiographies of soldiers in the Bodyguard regiment, the regiment served as a reservoir of skilled and trained troops. To give an example, the former Bodyguard officer Sekshing Lozang Döndrup (Sreg shing blo bzang don grub) describes in his autobiography how Bodyguard soldiers who had been trained in target shooting with all kinds of modern weapons, and in disassembling and reassembling these firearms, were then sent to other regiments to pass on those skills to other officers and soldiers.[182] In 1932 for instance, after twenty-five soldiers of the Bodyguard regiment were first trained in the use of new machine guns in Gyantse,[183] they returned to Lhasa and the train-

ditional Assistant to the Political Officer in Sikkim, Officer in Charge, British Mission, Lhasa (IOR/L/P&S/12/4201).

180 *Lhasa Letter for the Week Ending the 20th June 1948 from H.E. Richardson, Officer in Charge, British Mission, Lhasa* (FO/371/70042).

181 *Monthly Report of the Indian Mission, Lhasa, for the Period Ending the 15th August 1950, from H.E. Richardson, the Indian Trade Agent, Gyantse, and Officer in Charge, Indian Mission, Lhasa, Political Officer, Gyantse, Tibet, to the Political Officer in Sikkim, Gangtok* (FO/371/84453). See also Goldstein, *A History of Modern Tibet*, 621.

182 Sreg shing, "De snga'i bod dmag ka dang sku srung dmag sgar", 251.

183 Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 34 (and Gyaltse Namgyal Wangdue, *Political and Military History of Tibet*, vol. 1, 28) and "Military: Early in August 1932, the Tibetan Government sent Yuthok Se Tashi Dhondup new Depon, and twenty-five soldiers of the 'Royal Guards Regiment' to Gyantse for instruction by Captain W.D. Marshall in Machine Gunning and Bombing. Yuthok Se underwent five months of training in gunnery at Quetta in 1928. Kumar Jigme Tering was deputed as interpreter and was also ordered to undergo the training at the same time. The officers and men remained until

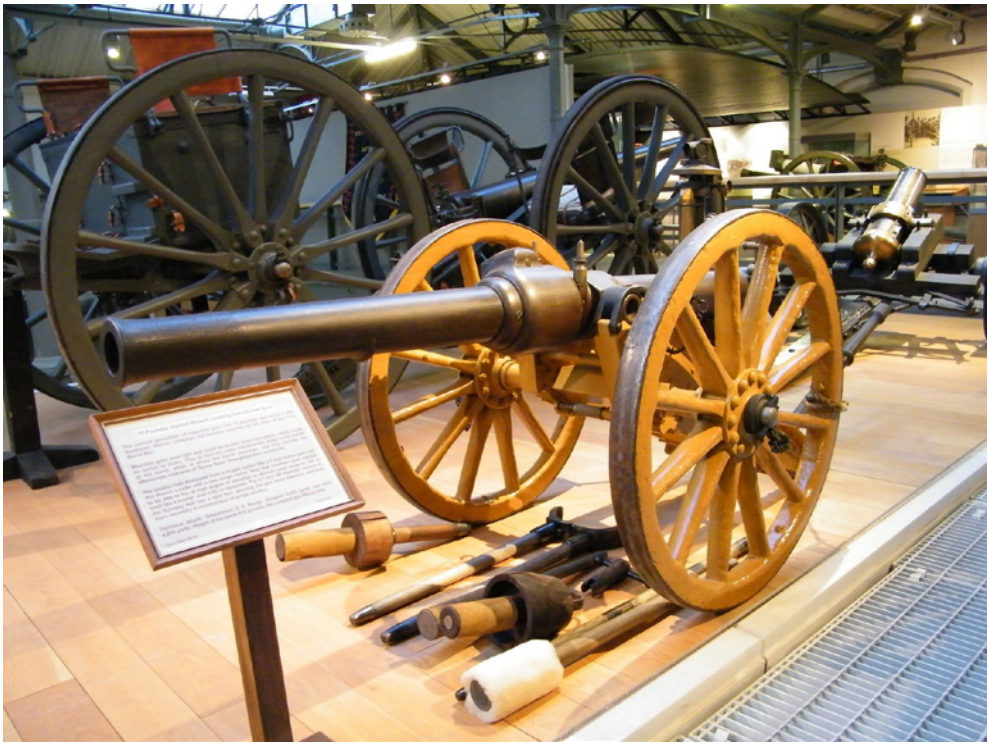

Figure 17 Example of a ten-pounder mountain gun, 1902 (Firepower Royal Artillery Museum, Woolwich, UK, CC BY-SA 3.0)

ees were immediately dispatched to other regiments, whom they instructed in machine gun drills, while Taring, who had also taken part in the programme in Gyantse, trained the new elite Trapchi regiment in its entirety as its commanding officer. In the following years, soldiers from various regiments received training in the ten-pounder mortar artillery (*me sgyogs kran pon krar*, see **[fig. 17]**) under the Bodyguard regiment officer *dingpön* Dingja Lhakpa (*lding dpon* Sding bya lhag pa), who had been trained by the British in artillery.

After such training, the best soldiers were sent to Kham to expand training to the other regiments stationed on the border with China.[184]

the 1st week of December, when they were called to Lhasa. His Holiness the Dalai Lama was very pleased with the progress made". Cf. *Annual Report of the British Trade Agency, Gyantse, for the Year Ending the 31st March 1933, Dated the 4th April 1933, Gyantse, from A.A. Russell, British Trade Agency, Gyantse and Assistant to the Political Officer in Sikkim* (FO/371/17138).

184 Taring's account as reproduced in Rgyal rtse rnam rgyal dbang 'dus, *Bod rgyal khab kyi dmag don lo rgyus*, vol. 1, 37 (and Gyaltse Namgyal Wangdue, *Political and Mil-*

Figure 18 Example of an Ordnance BL 2.75-inch mountain gun (Heugh Battery Museum, Hartlepool, UK, CC BY-SA 3.0)

In October 1944, the Trapchi regiment (*grwa bzhi kha dang dmag sgar*) was receiving instruction in the Ordnance BL 2.75-inch mountain gun (see **[fig. 18]**) from the Bodyguard regiment, who had learned its operation from the British in Gyantse and Lhasa early in 1944.[185]

A good depiction of how the training was organised is recounted in the autobiography of *rupön* Sonam Tashi (*ru dpon* Bsod nams bkra shis) based on his experiences.[186] Born in 1915, he entered the Bodyguard regiment in 1927, at the early age of 12. After a few years of being trained as a bugler and drummer, and of working on a construction site, he started his training as a proper soldier. He climbed the ranks of

itary History of Tibet, vol. 1, 30).

185 *Lhasa letter for the week ending the 22nd October 1944 from Major G. Sheriff, Additional Assistant, Political Officer in Sikkim, Officer in Charge, British Mission, Lhasa* (IOR/L/P&S/12/4201).

186 Ru dpon bsod nams bkra shis, *Bod dmag gcig gi mi tshe*.

officer, and was one of the few elite soldiers trained by the British. At the time he already knew how to fire a Lee-Enfield rifle, which belonged to the basic equipment of the members of the Bodyguard cavalry. He was among the twenty-five soldiers of his regiment trained in the use of Lewis guns, and the newly acquired machine guns and grenades (*lag 'bom*) in Gyantse in 1932. He was then sent to India for further training. In all, *rupön* Sonam Tashi spent over ten years of his military career teaching, moving between various regiments to train soldiers in the use, maintenance and repair of their new modern firearms. In 1941, then a Major (*lding dpon*), he, Yutok and two other teachers named Parchin Ngödrup (Phar phyin dngos grub) and Norbu Wangdü (Nor bu dbang 'dus) went to Chamdo in Kham, taking two machine guns, supplies and ammunition. There for two years, they taught soldiers from other regiments (Gadang, Chadang and Tadang) how to operate machine guns. Then *rupön* Sonam Tashi was sent to Dergé Jomda (Sde dge 'jo mda') on the eastern border with China to repair damaged machine guns. Later on, when the Chadang regiment was issued one machine gun, he was sent to them to teach twenty-five soldiers who belonged to the bodyguard of the Eastern Tibet Commissioner (Mdo spyi). Because his teaching in the Chadang regiment was considered a success, the Gadang regiment then requested that he teach them as well and he was ordered to teach one officer (with the rank of *zhal ngo*, i.e. equivalent to *lding dpon*) and six soldiers from each of the four units of 250 soldiers (*ru shog*), a total of twenty-eight soldiers in this regiment, how to use machine guns, maintain, disassemble and reassemble (*bshig sgrig*) them. He also authored a manual. In 1947, he received further training himself:

> It was decided that I would learn Bren guns (*sbi ran ghan*) and Sten guns (*krin ghan*) in Gyantse, with six soldiers of the Bodyguard regiment and six soldiers of the Trapchi (*kha dang*) regiment under two Indian instructors, specialised in automatic guns (*'phrul mda'*) […]. After seven days, an order came from the Army headquarters in Lhasa (*dmag spyi khang*) that the twelve soldiers who had been trained in Gyantse should pass on their knowledge to fellow soldiers in their regiment, and that the Bodyguard soldiers should train the soldiers of the Fourth (*nga dang*) regiment and the Trapchi soldiers should train the Sixth (*cha dang*) regiment. We twelve thus had to teach eighty soldiers from the Trapchi, fifty soldiers from the Bodyguard and twenty soldiers from the Fourth regiment, and when everyone was well trained, they should have a target shooting examination. At this time, on the day of the target shooting examination, we had at our disposal around 400 Bren guns (*sbi rang han* [*sic*]), and the Council of ministers (*bka' shag lhan rgyas*) came to attend.[187]

187 Ru dpon bsod nams bkra shis, *Bod dmag gcig gi mi tshe*, 28.

Thus, a one-week training of only twelve soldiers by two Indian instructors resulted ultimately in more than 150 Tibetan soldiers being trained to some degree in the use of Sten submachine and Bren light machine guns. Three years later in March 1950, only a few months before the Chinese invasion, *rupön* Sonam Tashi was again sent with a shipment of Bren guns and Sten guns to train troops under the command of Lhalu Tséwang Dorjé (Lha klu tshe dbang rdo rje, 1914-2011)'s troops in Chamdo.[188]

Thus, it is apparent that the central command of the army implemented a coordinated dissemination programme to other regiments throughout Tibetan territory, aimed at maximising the effects of having a limited number of soldiers and officers trained by the Anglo-British and then Indian army.

5 Conclusion

This paper has shown that a rapid modernisation of the Ganden Phodrang army's firepower was achieved during the early twentieth century, through both local production and importation within a remarkably short period of fifty-five years. If the Tibetan government has tried and failed to produce itself its own modern weapons for lack of technological means, it succeeded in obtaining the best available weapons and training. However, the Tibetan government did not manage to fully modernise its army firepower through imports, because the country put itself in a situation of dependency on a sole ally, British India, that carefully regulated the transfer of technology and supplies of weapons.

British and Tibetan archives as well as the autobiographies of Tibetan soldiers, taken together, testify to the many challenges the Tibetan government and its army faced during this modernisation process. The paper has retraced the actions taken by the Tibetan government towards this modernisation, which first witnessed the peak of technical transformation in local manufacture during the early years of the reign of the Thirteenth Dalai Lama (1895-1933) thanks to the acquisition of gunnery technology and knowledge from both China and India. However, local manufacture rapidly proved to be only a backup solution, especially to face the shortage of ammunition and the lack of imports from neighbouring countries. Both the failure of the first strategy revolving around local production and the possibilities for arms acquisitions opened by a new diplomatic relationship with British India after the end of the Manchu Empire led to a progressive, strong shift towards the import strategy. The unprece-

188 Goldstein, *A History of Modern Tibet*, 641.

dented increase of imported arms from 1914 to 1947 under the aegis of British India and, after 1947, India, proved to be the only tactic to keep up with the rapid development of firearms during this period.

The Tibetan terminology of modern firearms consists largely of phonetic renderings of Chinese for the first phase up to 1911, and for the greater part of English terms after this date, thus witnessing to the prominent role played by Tibet's neighbours in the 'firearms revolution' that Tibet experienced between 1895 and 1950.[189] However, this reliance on import put Tibet in a state of dependency towards Great Britain and was simultaneously problematic since Great Britain deliberately restricted their weapon exports to Tibet. During the entire period in question, the British Indian army's training of Tibetan soldiers in the use of their newly acquired weapons was limited to a few selected officers and soldiers. Nevertheless, the Tibetan government put measures in place to maximise the effect, by passing on the required knowledge to as much of its army as possible. In the end, all these examples clearly illustrate the many difficulties faced by a government that was trying to modernise its army firepower rather suddenly and, in a rush, to catch up with its more technically advanced and overbearing neighbours. These troubles were additionally compounded by the extreme political isolation of the country, that, after several decades of minimal contact with the external world in the second half of the nineteenth century, found itself scrambling to connect diplomatically, politically and commercially with surrounding polities.

189 Exceptions are the Tibetan terms *me mda' / bod mda', dbyin mda' kha ring, dbyin mda' kha thung, thung mda', 'phrul mda'* for light firearms and *me sgyogs* for artillery, see Appendix 1.

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Appendix 1

Chronological Appearance and Terminology of Firearms in Tibet

Tibetan name (used in soldiers' autobiographies)	Signification and origin	Years of use in Tibet
Light firearms		
bod mda'	Muzzle-loading Tibetan-made musket, matchlock / 'prong gun'	Until the first decade of the twentieth century in the Tibetan army (but well beyond in non-military situations)
grib yang can / yang chan	Probably a type of breech-loading long gun, like a bolt-action rifle. From the Chinese *yangqiang* 洋槍 (a general word for musket or long gun). Produced in Lhasa at the Drip factory after a Chinese model (nine-cartridge magazine)	From 1896
cu rtsi pa'o	Probably a type of cannon. From the Chinese *zhujiepao* 竹節炮 (a cannon looking like a bamboo tube with ring-nodes). Produced in Lhasa at the Drip factory	From 1896
dbu zhang	A musket or long gun. From the Chinese *buqiang* 步槍. Produced in Lhasa at the Drip factory	From 1896
mdel lcags shubs can gyi me mda' ring po	A long gun with a metal magazine for bullets	From 1912
'phrul mda' yang chang	A type of modern rifle produced in Lhasa at the Yamön factory	From 1914
dbyin mda' kha ring	Lit. 'British long barrel long gun', i.e. the Lee-Metford .303 calibre rifle Mk I and Mk II (imported)	From 1914
dbyin mda' kha thung / dbyin mda' kha dum / dbyin mda' kha 'dum	Lit. 'British short barrel long gun', i.e. the Short Magazine Lee-Enfield (imported)	From 1914, imported and then copied
thung mda'	Lit. 'short firearm', probably a type of side arm	
'phrul mda'	Designating any modern long gun with a mechanism more advanced than a matchlock: first, in the late nineteenth and early twentieth century, a breech-loading long gun like a bolt-action rifle, and later, in the thirties to fourties, an automatic machine gun or submachine gun, like the Bren and Sten (see below)	
lu'u si ghan / lu'u sin ghan / lu yi si ghan / lu si 'gan / lu se 'gan	Lewis gun (seized and later imported)	1912 and 1921

Tibetan name (used in soldiers' autobiographies)	**Signification and origin**	**Years of use in Tibet**
me shin gun /mi shin ghan / meg sin ghan / sbag sbag / me mda' sbag sbag	Machine gun (imported). Generic term including, in Shakabpa's work the Lewis gun. Later, from the thirties, designates the new generation of machine guns as the Vickers gun, the Bren and Sten guns, but not the Lewis gun anymore.	1912 (earliest use in Shakabpa's work) 1932 (earliest use in Tibetan biographies)
lag 'bom	Hand grenade	1932 (earliest use in Tibetan accounts)
bhe ran ghan / sbi ran ghan / bhi reng ghan	Bren gun (imported)	1941 (earliest use in Tibetan accounts)
kran ghan / spring ghan / krin ghan	Sten gun (imported)	1941 (earliest use in Tibetan accounts)
sab sbag sbag	Submachine gun (gen.) (imported)	
Artillery		
me sgyogs	Cannon (produced in Lhasa since the eighteenth century and into the early twentieth century)	
gor kha yang chan	A type of cannon produced in Lhasa	c. 1890
sbag sbag?	Maxim gun (imported)?	1912?
kran phon po kran / me sgyogs kran pa 'on krar	10-pound tank/10 pounder mountain gun (imported)	1921?, confirmed operation in 1924, continued in Lhasa in 1936
me sgyogs (no specific term known)	Ordnance BL 2.75-inch mountain gun (imported)	Exact date of acquisition unknown. Extant in Tibet in 1943
me sgyogs che ba ha'o dzar / ha'o dzar / ha wi dzar	Howitzer (between an artillery gun/cannon and a mortar) (imported)	Exact date of acquisition unknown. Extant in Lhasa in 1947
kru'u in ci mo kror / thi ris in ci mo kror)	2-inch mortar / 3-inch mortar (imported)	First date of acquisition unknown. In possession of the Tibetan army in 1950

Appendix 2

Copy of a Written Order from the *Amban* Which Forbids the Manufacture and Storage of Weapons, Dated 1910. Transliteration of the Tibetan Archive Document Published as Document 157. *Qingdai Xizang difang dang'an wenxian xuanbian*. Xizang Zizhiqu dang'an guanbian. Beijing: Zhongguo Zangxue chubanshe, 2017, vol. 1, 577 and vol. 3, 732.

// lcags khyi zla 2 tshes 10 nyin phul 'byor dgra chas me sgyogs / me mda' bzo bskrun mi chog pa dang / bzos zin rigs gzhung sger sus [su'i] khongs yod rung phyir bsdus thog tho gzhung 'bul dgos wang shu'i ngo bshus /
// Z gong ma chen po'i bkas mngags rma bya'i sgro mdongs dang / phu tu thung gi go gnas 'dzin pa bod sdod las byed blon chen lan am ban nas bkod khyab kyi rtsis 'jog las don zhu lugs dgos rgyu'i yi ge btang don / zhib na ngos Z rgyal khab kyi gtan 'beb rgyas dpyad du mnga' khongs mi ser nas rang sger dgra chas bzo mi chog pa dang / dmag mi'i dgra chas nyar tshags bgyis pa'i 'gal rigs byung tshe khrims srol zhin [bzhin] nyes dpyad bya dgos la khyod rang gzhung gnas nas gser Z snyan ma sgron par rang mtshams me mda'i bzo khang btsug ste me mda' / me gyogs [sgyogs] bzo dbyibs ma gcig khag bzo bskrun bgyis pa ni dpyad mtshams dang 'gal ba ci cher brten nged blon chen nas zhib 'jug gi [gis] bzo khang 'di bzhin dam bcad kyi slar yang rang mtshams btsug bzo mi chog cing / lhag par de ga bzo khang du sngon bzos me mda' ji yod dang / nyo sgrub bgyis pa'i me mda' gsar pa'i rigs / bod dmag la sprad pa'i grangs 'bor / lag yod bsogs 'jog grangs 'bor bcas dang / bod dpon rigs mi ser nas nyar tshags bgyis pa'i me mda' gsar pa'i rigs kyi skor chab gcig [chabs cig] bkod khyab tsha nan gyis brtsad dpyod [rtsad gcod] ma bgyis tshe dpyad mtshams la rtsa 'gangs dang / bde 'jags bsrung 'doms yong min bcas / de'i ched yi ge 'di bzhin btang ba khyod rang gzhung gi las don gzhor [snyor?] skyongs byed po dga' ldan khri 'dzin nas rtsi 'jogs kyi wang shu'i 'bru don ltar 'phral du re re bzhin bkod khyab kyi phra zhib brtsad dpyod [rtsad gcod] bgyis pa las / sbugs bkums [sbug skung] g.yo zol rigs mi chog cing / brtsad dpyod [rtsad gcod] bgyis pa'i me mda' bsog 'jogs dang / grangs 'bod phyir sprad byas rigs / mi ser nas me mda' gsar pa sger tshag byas pa sogs zhib gsal tho gzhung 'di na ya mon du phul 'byor byung bstun zhib 'jug byed bde yong gnas la phar 'gyangs ka skor du 'gro rigs shar tshe nyes pa thob yong bas / de don 'gal med yong ba gyis / shon thong khri bzhugs gnyis pa zla 2 tshes 9 la /

Appendix 3

Undated Report of a Tibetan Named Tamdrin Selling Bullets. Transliteration of the Tibetan Archive Document Published as Document 157. *Qingdai Xizang difang dang'an wenxian xuanbian*. Xizang Zizhiqu dang'an guanbian. Beijing: Zhongguo Zangxue chubanshe, 2017, vol. 1, 158 and vol. 3, 720.

gus 'bangs rta mgrin nas phul ba / 'khrun chod zin /
// gus 'bangs rta mgrin nas zhu ba / gus pa 'ong stod zhing khar me mde'u re gnyis rnam kun 'khroms [khrom] bton byed bzhin lags pas / nye bcar [char] zla 8 tshes 16 nyin gong bzhin khrom sar sdad [sdod] mus skabs ser 'bras kyi grwa rigs 'dra ba zhig gi [gis] u shang mde'u dgu dngul zho bdun skar lngar spus tshong byung stabs gus pa'i khrom sar mde'u re gnyis dang byung mde'u rjes [brje] len skabs rlung rta chu 'dren lta bus lag nas me 'bar ba las / rang bzhin dal rgyag gi spyod ngan zhus rigs bstan [gtan] nas med pa dang / de 'brel bod bzos mde'u rnams gus pas rgyu 'gro khrom nas spus sgrubs kyi bzo mi rdo [dog] sde'i bzo pa chu rgyus pa yin lags na / gong gsol rgyu mtshan la he bags [bag] med gshis bla dpon byams brtse'i mnga' bdag mchog nas nyam chung nyin tshe nyin 'khor lto 'tshol la dgongs pa'i lha rab mde'u 'phros lus rnams gsol ras thugs rje che ba zhu rgyu'i zhu rtags su /

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