Global Focus on Knowledge Lecture Series

3rd Lecture Reading History from Historical Materials

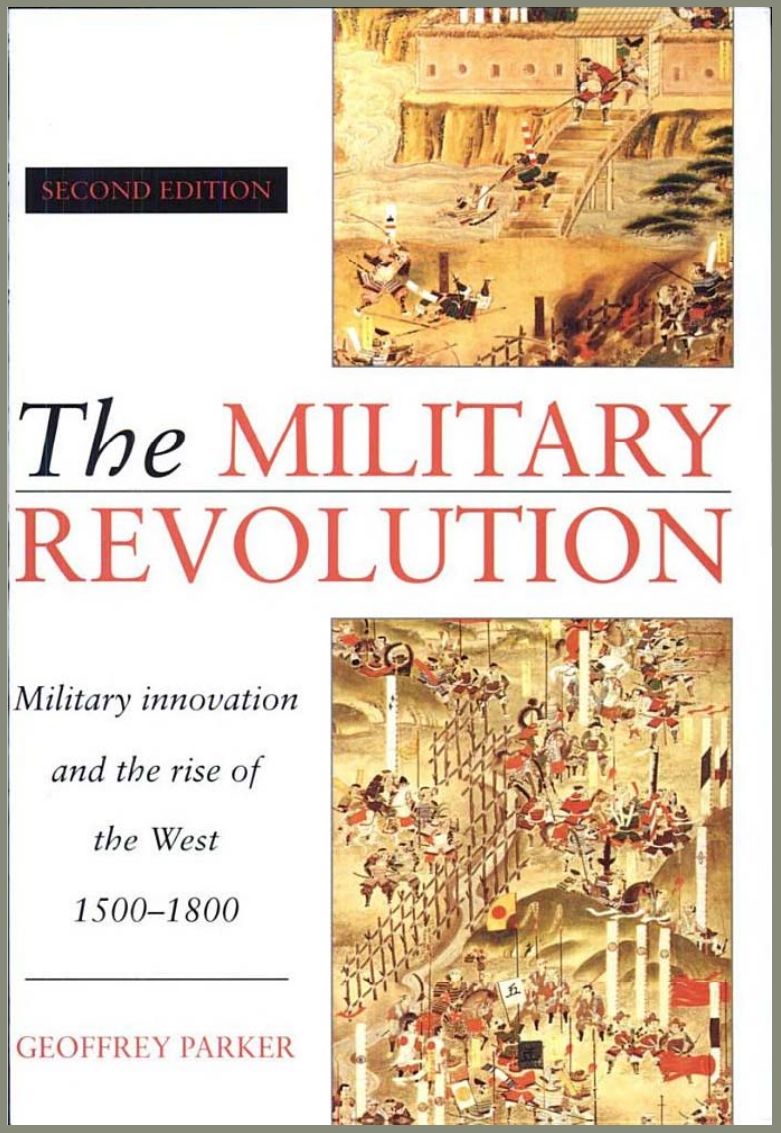
—Bakumatsu [Late Tokugawa] Period—

Toru Hoya
Historiographical Institute, the University of Tokyo

Introduction

- The Introduction of Guns in World History
  Research on guns (physical objects) and various theories on the spread of firearms

By courtesy of National Museum of Japan History



The "Military Revolution "in the West Theory and Sengoku Era Japan (Theory of East and West in the 16th Century)

spread of firearms ⇒ revolution in tactics ⇒ standing armies/directly controlled territories (finances). However, doubts about the "three-rank volley fire" (three guns per shooter?) defense by forces of Oda Nobunaga at Battle of Nagashino

The Military Revolution(1988)
Military Innovation and the Rise of the West, 1500–1800
2nd Edition
Geoffrey Parker

‡

Introduction of theory of abandonment of firearms in premodern Japan to the world (see **Giving Up the Gun: Japan's Reversion to the Sword, 1543-1879**, by Noel Perrin). Evaluation that this amounted to "abandonment or interruption of military revolution"

Significance of separation of samurai and farmers and national isolation (*sakoku*)

"Giving Up the Gun: Japan's Reversion to the Sword, 1543-1879"
Noel Perrin

Here we will focus on the second "introduction" during the 250 years of the "Tokugawa Peace"

‡

帝国の手先—ヨーロッパ膨張と技術
ダニエル・R. ヘッドリク (著), 原田 勝正 (翻訳), 老川 慶喜 (翻訳), 多田 博一 (翻訳)
日本経済評論社 (1989/08)

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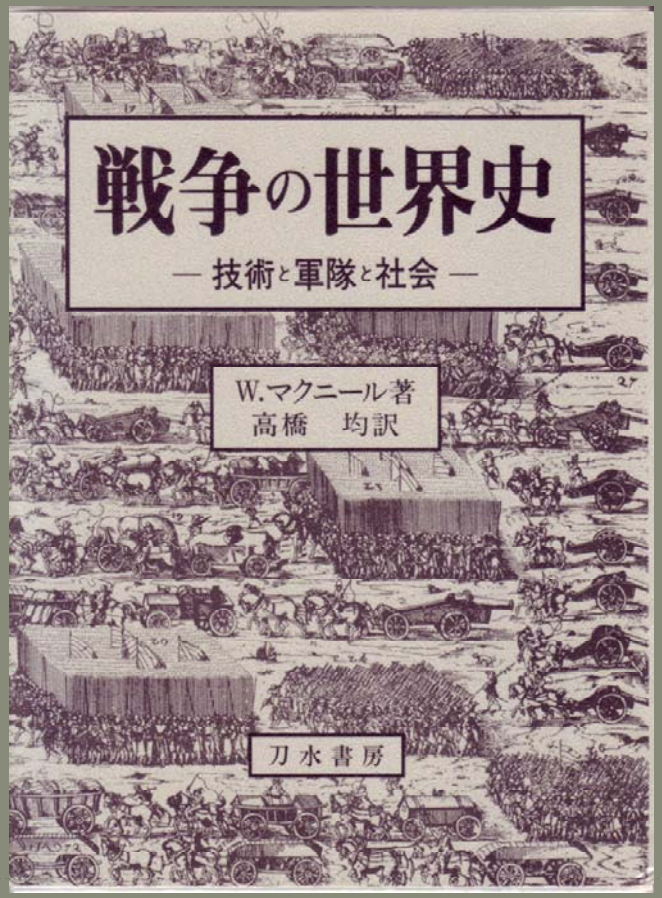


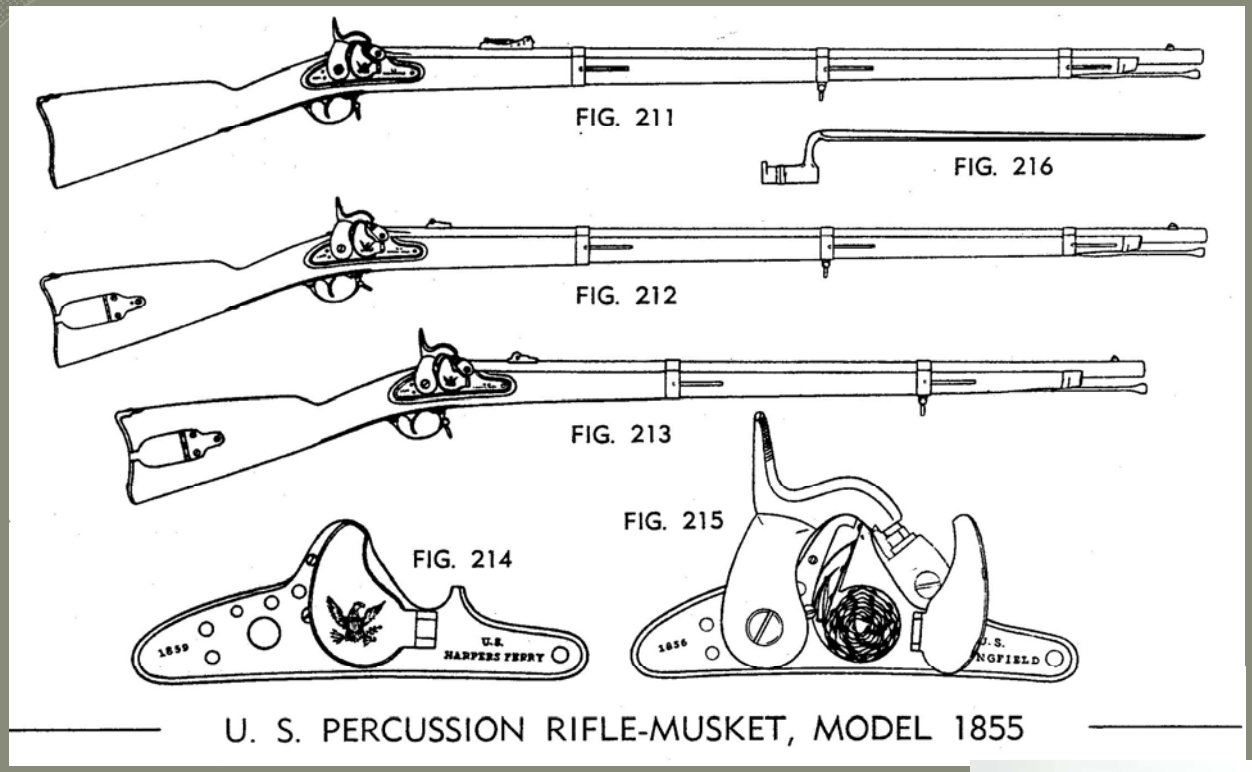
戦争の世界史—技術と軍隊と社会
ウィリアム・H. マクニール (著), William H. McNeil (原著), 高橋 均 (翻訳)
刀水書房 (2002/04)

1. Our research on firearms begins with a "gun of mystery"

- Analysis of object (small arms)

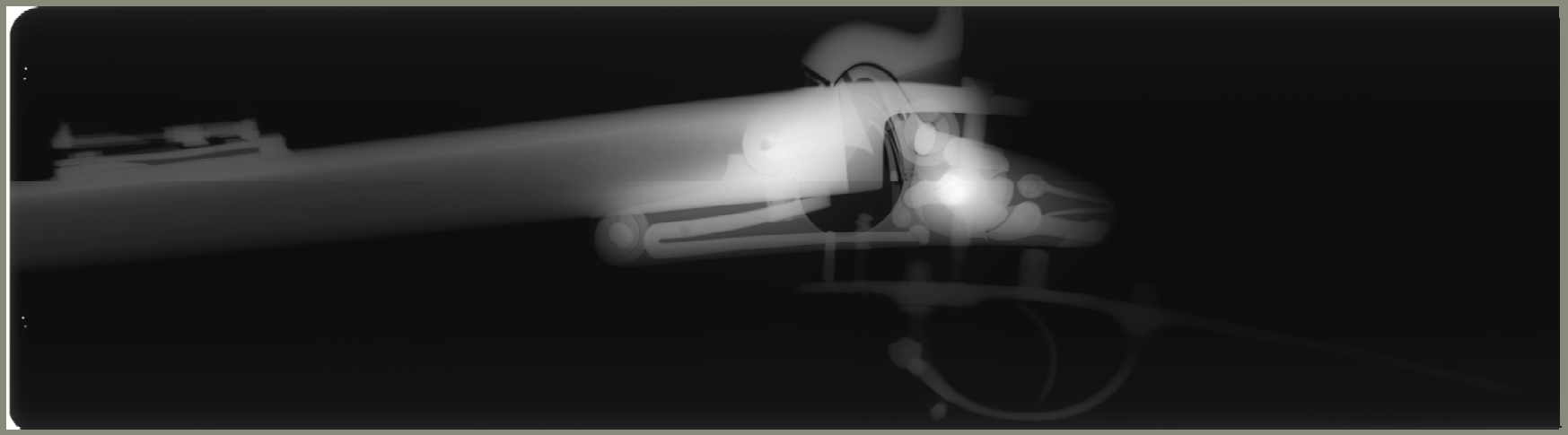
By courtesy of Musashimurayama municipal museum of history and folk customs

Copy of American Springfield infantry rifle (model 1855) one of the Western small arms used by the peasant soldier rifle troops led by Shogunate magistrate Egawa Tarozaemon (Egawa Tan'an)
Caliber—14.7mm; length—1,400 mm; weight—4kg; Maynard-type percussion mechanism
Originally was a muzzle-loading percussion rifle-musket, so should not be considered as a true rifle?



U. S. PERCUSSION RIFLE-MUSKET, MODEL 1855

- Discovery and verification of related historical materials
  - Shipped from United States beginning in 1860 (U.S. State Department historical materials)
  - Parts verification (billing-side accounts)
  - Copies produced under Egawa's authorization
    - Plan to produce 2,000 units in 1861



Existing gun barrel rifling machine made of wood

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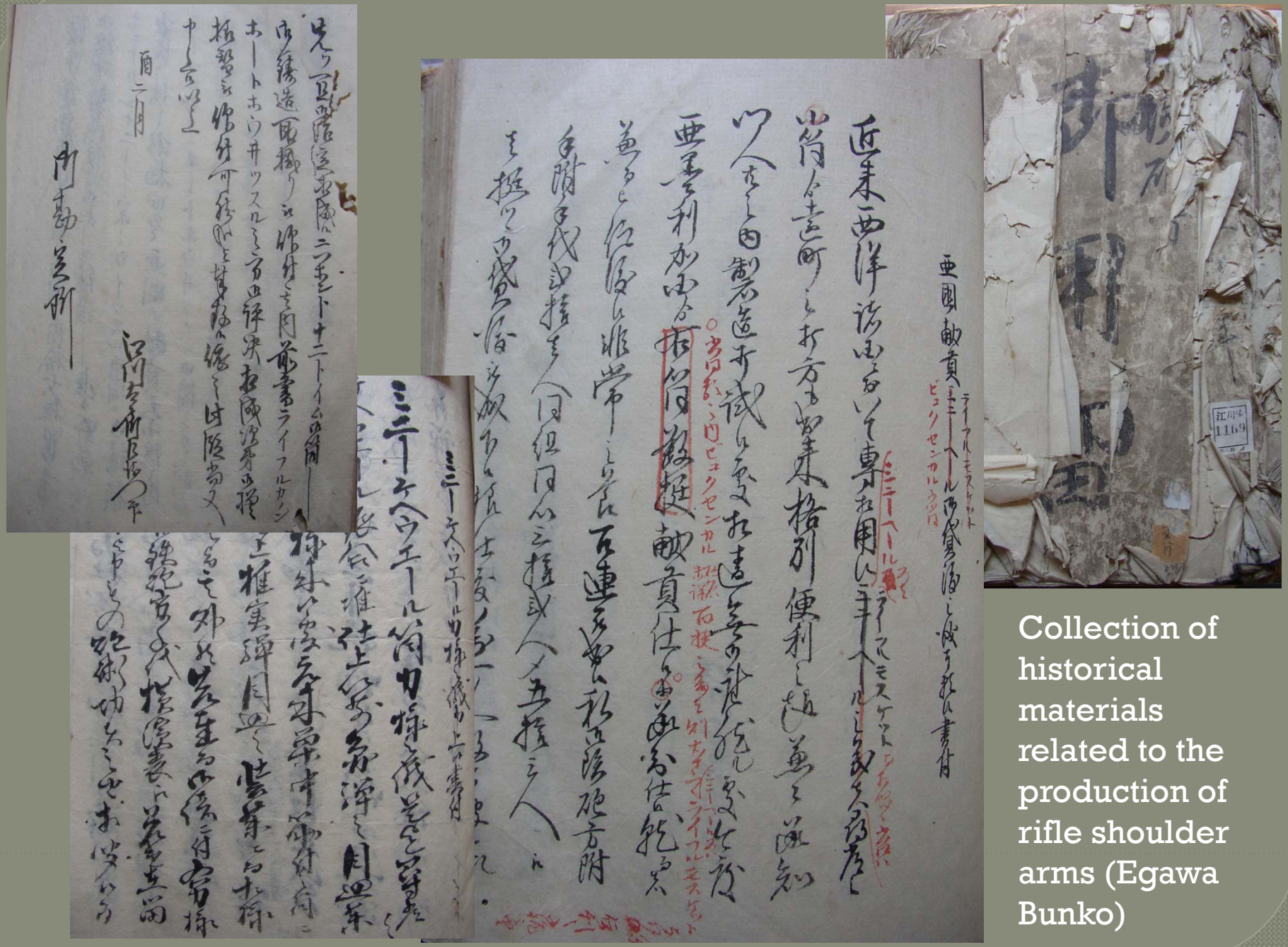


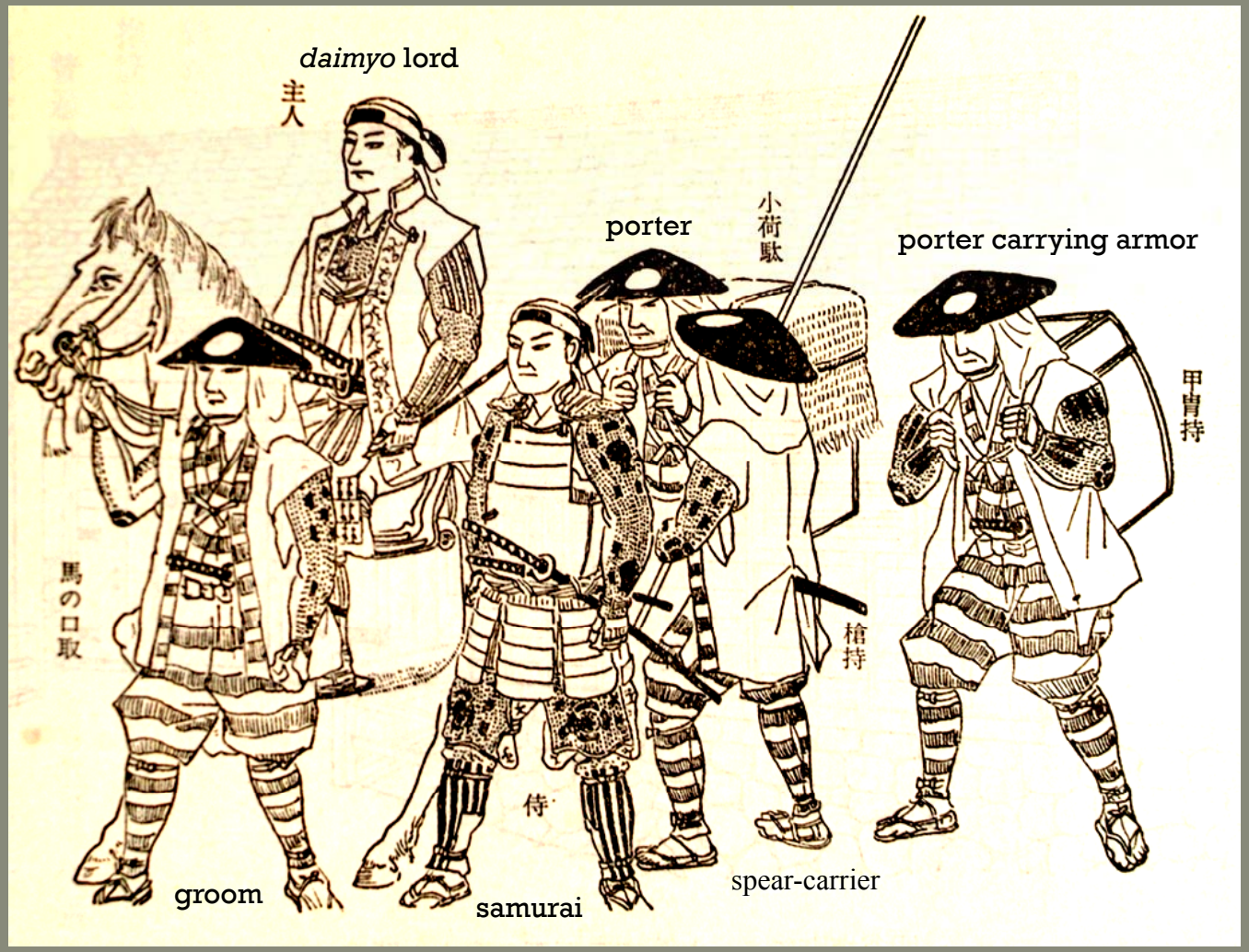
Collection of historical materials related to the production of rifle shoulder arms (Egawa Bunko)

Combat units and force composition of *bushi* during the Kinsei (Early Modern) Period

Reprinted from Wiklipedia
http://ja.wikipedia.org/wiki/備 (2010/02/04)

***Daimyo* Retinue** — *ashigaru* equipped with matchlocks, bows, spears + mounted lord and vassals + baggage carriers (peasant porters)

Combat units and force composition of *bushi* during the Kinsei (Early Modern) Period



Example of a *bushi* combat unit (with leader)

江戸幕府役職集成, p28より転載
笹間 良彦 (著)
雄山閣出版; 新装版版 (1999/11)

2. Revolution in Firearms during Latter Half of the 19th Century: World history of guns

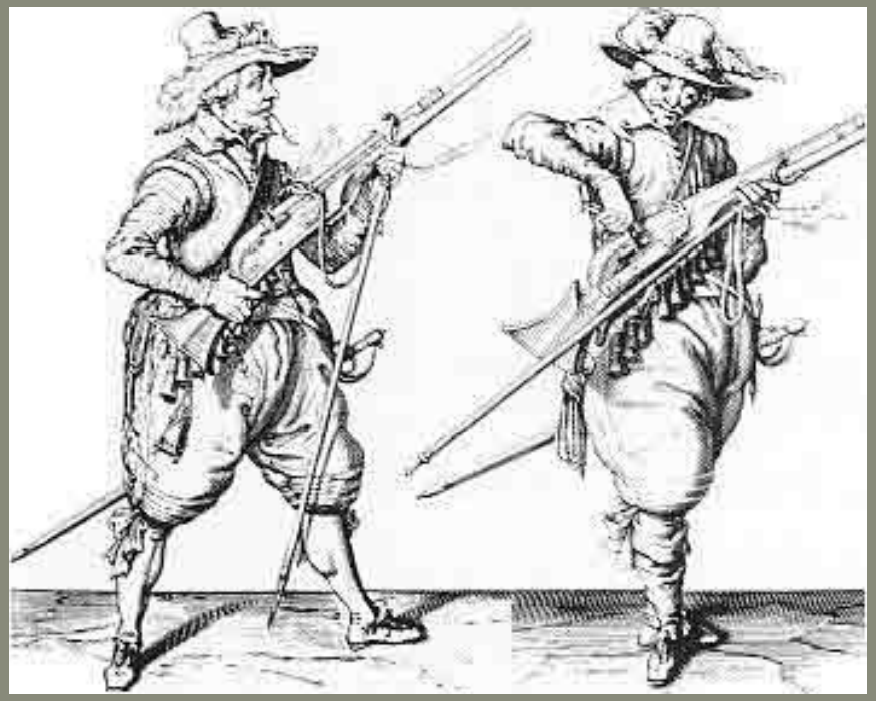
○ Matchlocks and muskets

Differences in tactics between East and West

Shift from close formations to barrages in the West, emphasis on individual skill levels (sharpshooting) in Japan

⇒ Takashima-style gunnery introduced after Opium War—Introduction of Western tactic of musketeers in ranks (“three combat arms” tactics for infantry, cavalry and artillery)

Western matchlocks



Development of musket rifles

from flintlocks
to percussion-lock guns

By courtesy of National Museum of Japan History

National Museum of Japanese History

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Development of small arms

ignition method	matchlock method	flintlock method	percussion method	(standardization of ammunition boxes)
non-rifled (smoothbore)	musket (Gewehr)		Gewehr	(hunting guns and shotguns)
rifled (rifled barrel)		Dutch flintlock rifle	Minie, Enfield	Snyder, Sharp, Chassepot, etc.
				(repeating rifles) Spencer, Winchester, etc.
Gun-charge method	front-loading type (muzzle loaders)			rear-loading type (breech loaders)

Takashima Shuhan and Egawa Tan'an

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Takashima Shuhan

By courtesy of Shogetsu-in

Figure removed due to copyright restrictions

Egawa Tan'an

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Development of Minie Bullets (expansion type)

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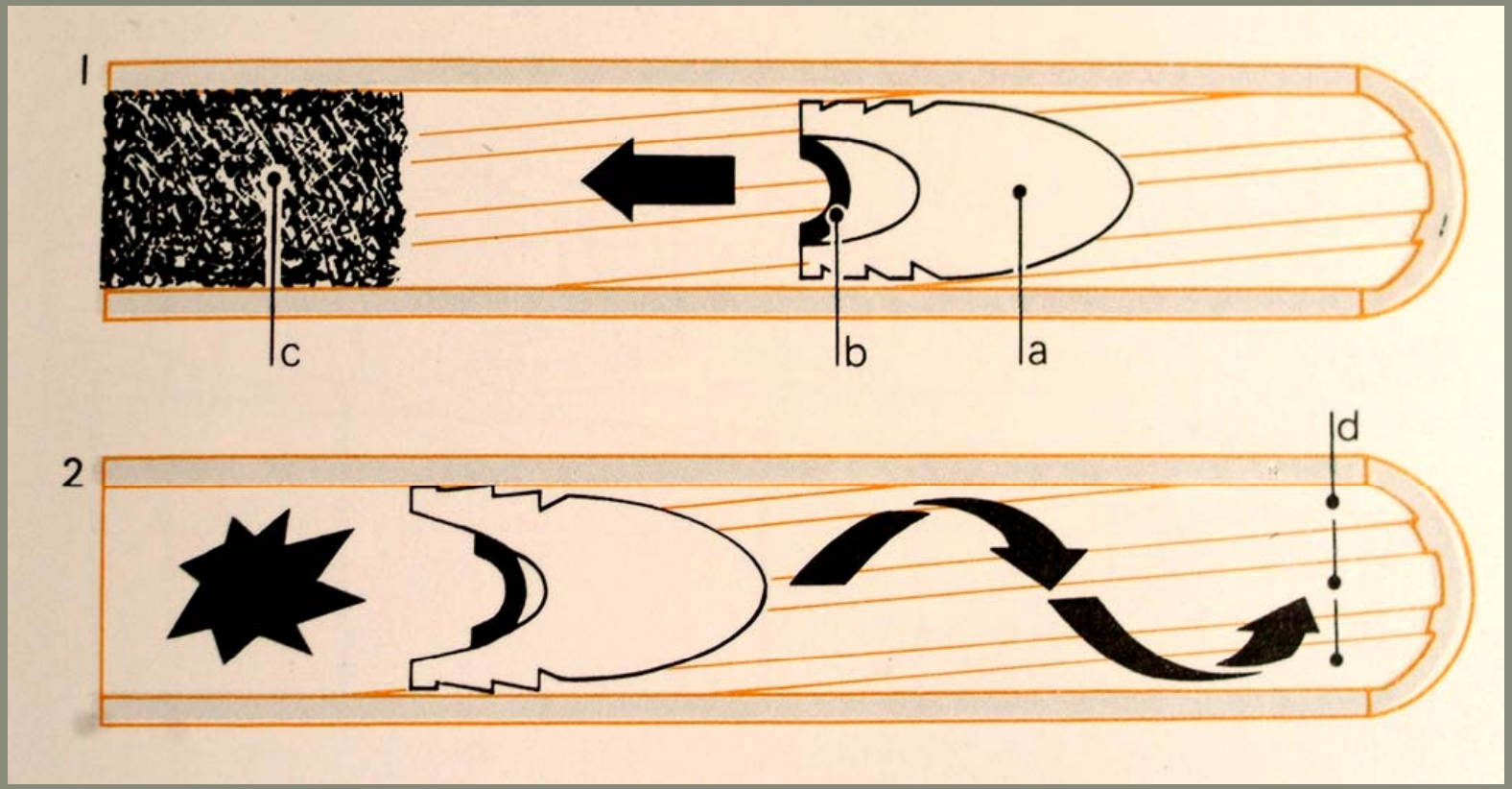


Production of Shoulder Arms by Shogunate (under Egawa)

Production of small arms at the Yushima Armory

- Plan to manufacture 10,000 units (1855)
- Contracted production by gunnery teachers (8,000 units fabricated in 1861)
- Systemization of Gewehr guns (8-*momme* bullets, 1845 Dutch-type)
  - ⇒Gewehr guns throughout Japan mostly domestically produced

However, the situation changed as new-type rifles were received from the United States: Egawa Production Plan (1861) called for 2,000 rifles and 25 field guns (rifled cannon) to be produced.

But exactly what kind of firearms were these?

○Instruments of Empire: The Age of the Rifle

Development and dissemination of a particular rifle (Minie-type rifles).
Epochmaking in its popularity (American guns the first step)
Changes in tactics (as seen in drill charts and historical records) from tight formations to volley firing
⇒Dispersed-soldier method for deployment/sniping

Did1864 Shogunate training manuals (Dutch-style) envisage shift to rifle ranks?
⇒After 1865 reprecussions in many areas, including introduction of British/French instruction, establishment of an armory with imported machinery
First steps in reform of feudal military service: conscription (universal service), production soldiers (armory) allocation of financial resources (including official Shogunate funds, etc.)

Astonishing Fighting Style of the Choshu Soldiers (1866 Choshu War)

When the Choshu forces appeared, their rifle units were running forward together, and when the time came to fire, the beat of their drums stopped and they would come to a halt. They would then quickly disperse, quickly spying out individual cover and concealing themselves. They would only show their faces when they fired or crawled forward. . . Their ranks would constantly be replaced by fresh troops, and even with the approach of nightfall they did not let up in their fighting. Wherever they sensed a weak point, they would drive forward. Their guns were all new and they did not use a muzzle ramrod, but loaded the bullets through a hole at the back. And each soldier steadied the butt of his rifle on the ground when ready to fire. I could not help but admire the speed with which they loaded the ammunition and how the dispersed soldiers moved with such nimble efficiency. Their cannon meanwhile would alternate between firing pointed shells and round shells. Down to the platoon level they were equipped with small, short banners, but did not have a single spear. Their uniforms were narrow-sleeved, either black or dark blue in color. And probably the majority of them did not even wear *haori* (short coats worn with kimono). As for bamboo hats, even though they were equipped with Nirayama-style hats, when fighting they would not bother to wear them even in the rain.

(September 1866, Research Diary on Battle at Ogura of Samurai from Kaga *Han*)

Hit Ratios for Percussion muskets (smoothbore guns) and Minie guns (rifled guns)

Distance (yards)	Percussion Muskets	Minie Guns
100	149 (74.5%)	189 (94.5%)
200	85 (42.5%)	160 (80.0%)
300	32 (16%)	110 (55%)
400	9 (4.5%)	105 (52.5%)

These results are for 20 individuals shooting 10 times each at a target 6-feet high by 20-feet wide for a total of 200 shots for each distance.

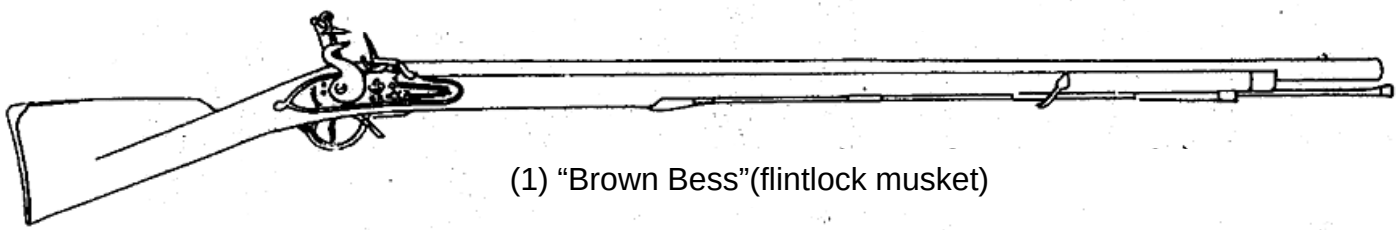
(W. W. Greener, "The Guns and its Development",1899)

In February 1865 (Keio 1) a weapons contest to compare the performances of Japanese-style guns with Western-style guns was held in front of His Lordship.

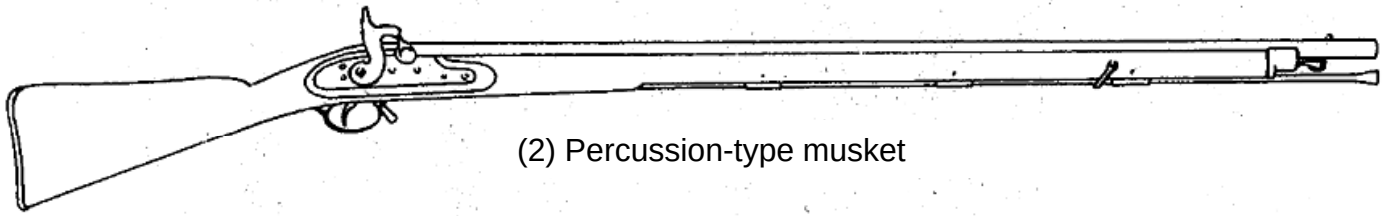
The experts in Western gunnery had a 11-year-old boy fire a breech-loading rifle of American make (a Sharps rifle?)

A metal target measuring about three feet on each side was set up at a distance of two hundred yards. The expert in the use of matchlocks and his chief disciples repeatedly shot at it, but missed. Ocassionally, they would score at hit but with little force, only sufficient to leave faint white marks on the target. On the other hand, when the 11-year-old youngster shot, the results were tremendous. Although three of his shots missed the bullseye, all of his bullets penetrated halfway into the metal target.

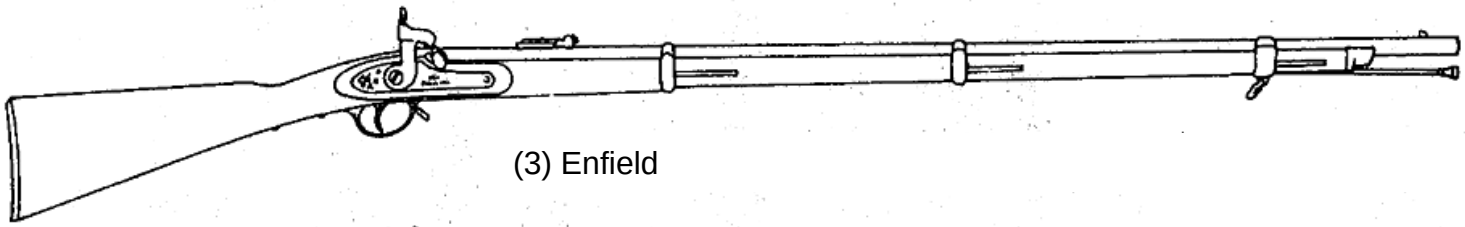
（"Draft of Historical Materials on History of Weapons," from a Draft of Historical Materials on the Combat History of Sastuma *Han*）



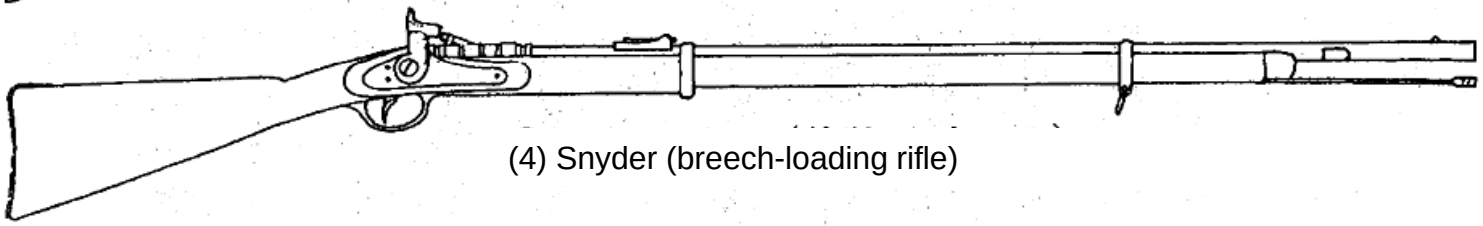
(1) “Brown Bess”(flintlock musket)



(2) Percussion-type musket



(3) Enfield



(4) Snyder (breech-loading rifle)

The development of small arms (British-manufactured guns)

(1)-(3) are muzzle-loading guns. (1) and (2) are smoothbore guns using bullets. (2) is a so-called “perscussion Geweher gun.” (3) This short gun with a two-band stock is an example of the short Enfield—the shoulder arm most imported into Japan.

Enfield rifle (Minie-type muzzle-loading rifle)

During the middle of the 19th Century, the muzzle-loading rifle came to be adopted as the standard small arms weapon in the West and was mass produced in mechanized factories.

From the Enfield to the Snyder

A short decade later many different types of breech-loading guns appeared and were adopted as standard shoulder arms.

The strong point of the breech-loading rifle is that when loading the rifleman does not expose himself to the enemy ($\Rightarrow$ trench warfare)

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the upper section：
By courtesy of National Museum of Japan History
the lower section：
reprinted from http://www.nps.gov/spar/historyculture/breechloader-miscellany.htm(2010/02/04)

Could not be domestically produced, relied on imports, muzzle-loading rifles still in widespread use

Various breech-loading rifles.

Breech-loading rifles were expensive and prevented ammunition self-sufficiency

Examples of Gun Imports through Nagasaki (By Satsuma *han* 1867/1868)

取引日	取引数(通算)	取引商社(銃種)	取引額(1丁あたり)
10月24日	150(150)	シキウト	
12月17日	100(250)	レーマン	
2月6日	326(576)	ウォルシュ商会(Rifles with Bayonets)	374両1分
4月6日	110	ガワー商会(Short Enfield Rifles)	1430両(13両)
4月14日	200	ガワー商会(Long Enfield Rifles)	2200両(11両)
6月29日	100	カールニッコル商会(Rifle Carbine)	3225両(32両1分)
8月1日	300	ケース	
10月4日	200	キニッフル	
10月19日	500	ヒューズ商会(Long Enfield Rifles)	12500両(25両)
	〔1130不明〕		
11月22日	100(3206)	ガーイマンス(Lange Enfield Rifles)	950両(9両2分)
	100(3306)	ヒューズ商会(Snider Rifles)	2650両1分(26両2分)
11月24日	680(3986)	ヒューズ商会(Short Enfield Rifles)	8500両(12両2分)
1月9日	140(4126)	ガワー	
	120(4246)	ボードイン	
	〔292不明〕		
7月29日	600(5138)	ボードイン （ルーレイロ)？	
	200(5338)	オールト商会(Short Enfield)	2842両2分(14両1分弱)※胴乱込み
9月14日	480(5818)	アデリアン商会(Rifles)	7200両(15両)
9月16日	20(5838)	ガワー商会(Rifles)	220両(11両)
	180(6018)	シキウト(Rifles)	1867両2分(10両1分余)
9月21日	300(6318)	レインボールイス(Short Enfield Rifles)	4050両(13両2分)
10月24日	200(6518)	レインボールイス(Rifles)	2200両(11両)
11月17日	80(6598)	レインボールイス(Rifles)	1000両(12両2分)

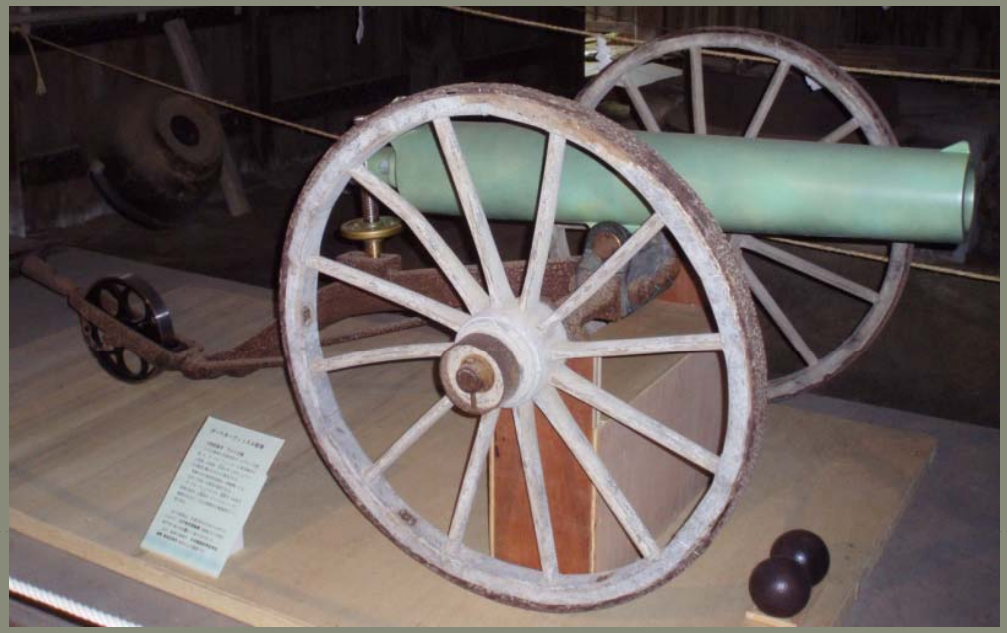
○ Introduction of cannons

Differences between Japanese-style cannons and Western-style cannons

Casting of large cannon, reverberatory furnace and cast cannon

Discussion of rifled cannons

Discussion of 4-*kin* (2,400 gram) mountain artillery

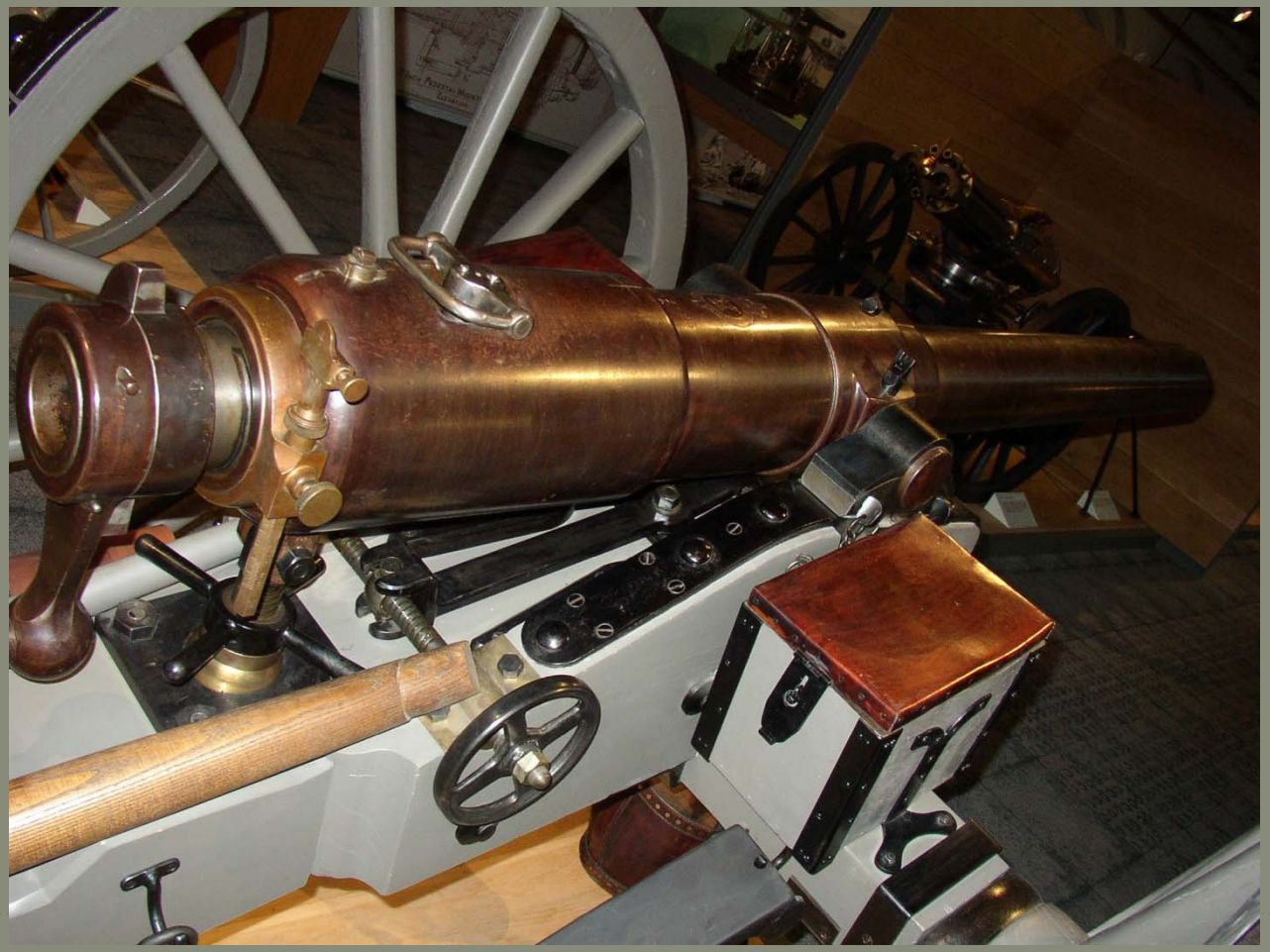


Japanese-style *One Kanme* Cylindrical Cannon (cannon seized from Choshu)

Differences in Casting Methods: Breech cylinder-type Japanese cannon

Nirayama reverberatory furnaces

Reference) Armstrong field gun



Reference) 100-pound Armstrong gun

Impossible to respond to technologies of large wrought iron cast cannon (built-up construction cannon) and cast steel cannon.

3. Military Reform in the Bakumatsu (Late Tokugawa) Period and the last conflict of the Kinsei (Early Modern) Era

○Military service system and tactical thinking of the early modern era

Military (service) preparations and organization of military units

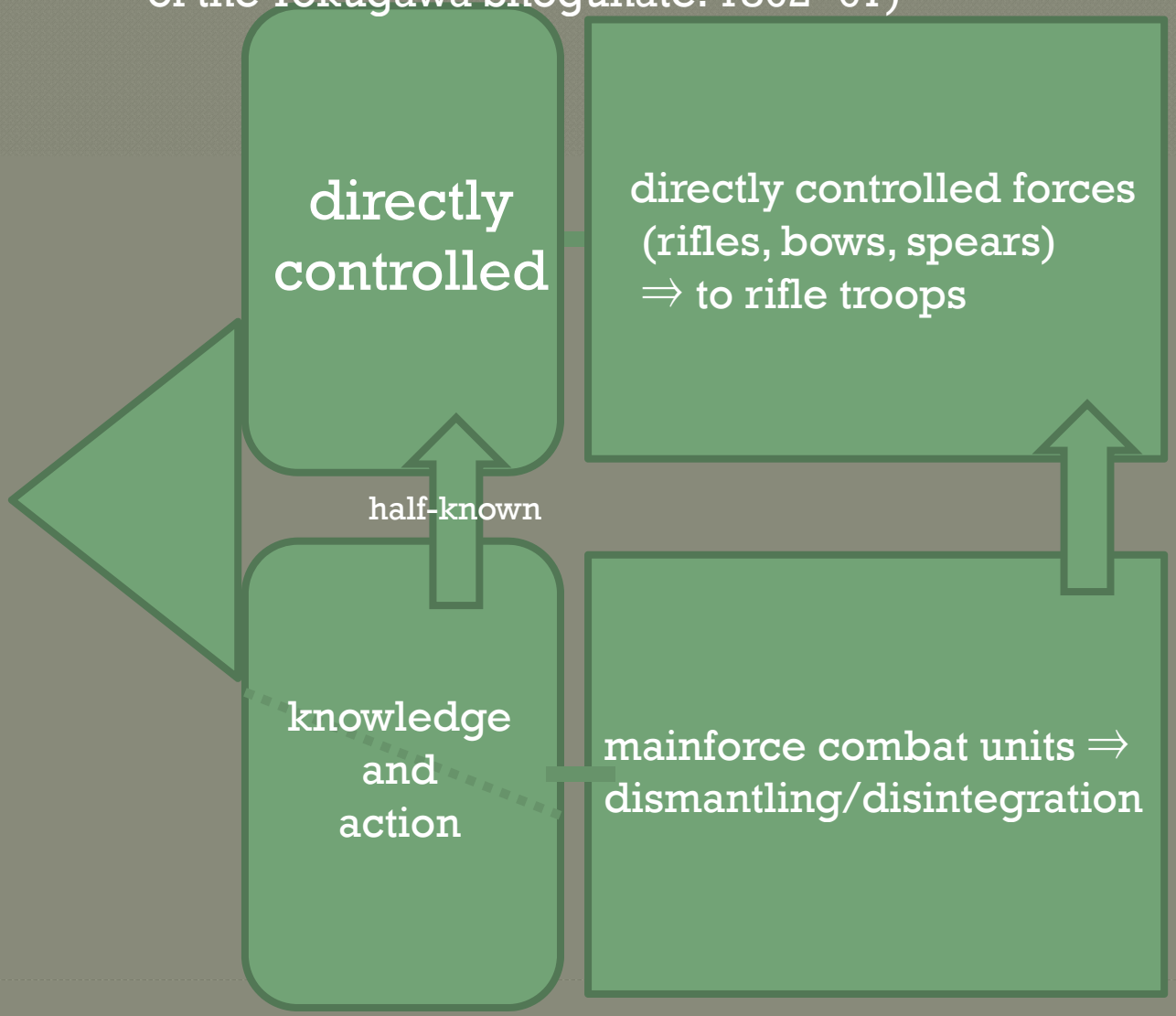
Reform of military systems in the Bakumatsu period and rifles

Concentrated employment of manpower

⇒ unification, concentration of authority

⇒ reorganization as an early modern "Barracks State"

The switch to rifle units occasioned by the firearms revolution and model for concentration of authority (case of the Tokugawa Shogunate: 1862~67)



Recruitment of forces from directly controlled territories

Conscripts account for half of forces

Foot soldiers incorporated (joint rifle units)

Financing (adoption of uniform methods)
General conversion to rifle troops

Radical reform of military service impacted very existence of the bushi

3. Military Reform in the Bakumatsu (Late Tokugawa) Period and the last conflict of the Kinsei (Early Modern) Era

○From the Kinsei (Early Modern) Period to the Kindai (Modern) Period

- Military modernization during the Boshin War : The new government, led by military reformists from Satsuma and Choshu, resolutely undertook a shift to rifle troops.
- Introduction of shoulder arms and methods of warfare; factors deciding victory or defeat
- Social history of the battlefield: Even with rifle warfare, soldiers were eager to take heads

Mobilization of Military Forces under the New Government (1868)

(order to various fiefs [*han*] participating in the Eastern Expedition against remnant Tokugawa forces)

Exempted except for rifle forces, artillery forces

Exempted except for rifle forces, artillery forces

- Supernumerary officials will be exempted with the exception of those handling practical duties including unit commanders (*taicho*), general commanders (*shirei*), transport officers, etc.,
  However, only if the duties of the individual concerned are such that absence from the capital (Kyoto) would not cause problems
- Dispensation from transporting unnecessary clothing and spare armor

February Bureau of Naval and Land Military Affairs (*Kairikugun Kyoku*)

The Boshin War was an early example of the modern battlefield

Sometime after four in the afternoon an exchange of gunfire erupted, and continued until eight in the evening. At first each side was probably firing at the muzzle flashes from the enemy side. In order to break the deadlock, patrols were sent to out to start fires in Nakano Village. The first attempt failed, but with the second we saw flames shooting up and we shot at them with mortars. As the rifle fire continued, we coulc see charging enemy soldiers against the backdrop of flames. The seven-shot *kiju* (miracle guns) fired without a pause, but that didn't slow the enemy in the slightest. Our unit was split in two, with half to the right and half to the left, with the seven-shot guns to one side and the "double-band" guns to the other side. The fire from the seven-shot guns seemed to be especially fierce, so the enemy advanced largely on the double-band gun side. However, our battle line held and it appeared that even these crack troops must have realized the futility of their effort because they fled in utter defeat. 1868.8.5 Fourth Batallion

Journal of the Boshin Shinai War

Enemy attack Without any warning, enemy fire commenced from a grove some three or four hundred *cho* (c.330-440 yards) from the Hinoura Camp, and the return fire started from where our fief's forces were stationed.
(1868.6.26 Echigo Nagaoka support party)
The attack on Shinjo began with a lengthy artillery barrage from 300 yards, advancing to 100 yards.
(1868.7.14 2nd Batallion)
[Talk of Shirouemon]
The artillery duel at Ki no Moe Pass never let up. The distance ranged from one *cho* (c.110 yards) to something less than four or five hundred *cho* (c.440-550 yards). As a result, all the trees and shrubs, both large and small, were knocked down, and the whole area took on the appearance of a wasteland.
(1868.7.21 Nagaoka Support Party)
We attacked the enemy's breastworks at Hisada in two or three spots from only five or six *cho* (c. 550-660 hundred yards) distance.
(1868.7.25 Echigo Nagaoka Support Party)
[Kenzo Memo]
We broke Karuwano and attacked the enemy on the bluff. At 400 yards the enemy's bullets rained down on us, cutting down the flag bearer of our unit (half-batallion). Our incensed troops advanced and at 300 yards began firing at the enemy. But when our unit leader was cut down by enemy fire, we had to retreat.
(1868.9.15 2nd Batallion)

Although there were major changes in combat methods due to the new style of firearms, the habits of the *bushi* remained the same. Warriors still went in for the taking of heads, plunder and capturing of prisoners.

[Mosuke's Diary]

I almost ran right into an enemy scout on the top of Mt. Tamasaka. Since only four or five *ken* (c.25-30 feet) separated us, just as the enemy was trying to spin his gun around, I shot him in the waist, hitting him so that he fell to the bottom of a ravine. Afterwards, I took his rifle, his head and his long and short sword as trophies. (1868.8.5 4th Batallion)

The heads taken at Kanayama were wrapped in straw and three sacks were forwarded [to headquarters]. Five were exposed for view at Yuzawa Inspection Point, two in front of the wholesale store, ten at Yokota and seven inside the temple. Yanagisawa Harima's head was pickled in salt and together with the captured long swords, spears and a battle pennant decorated with a large sparrow crest in bamboo was sent with a guard of seven or eight soldiers of various ranks on their way to the castle. After the fall of Yokota Castle, workers from the town had to clean up more than 80 corpses, of whom 50 were of samurai rank. (1868.8.12)

Conclusions

During the more than 300 years after guns were first introduced into Japan, technologies developed for new firearms, including rifled shoulder arms. Bows and spears became useless on the battlefield, leading to tremendous changes in armies and warfare.

The Boshin War (1868-9) occurred in the midst of this new technological stage. This conflict not only resulted in the fall of the Tokugawa Shogunate (Edo Bakufu), which had lasted for more than 260 years, but also preseaged the disappearance of the "world of the warror" (*bushi no yo*).

The Conscription Ordinance (*Choheirei*) of 1873 resulted in the organization of a national army based on universal conscription, signalling the beginning of the second introduction of firearms and the development of modern military forces.