

Part I	The Song and Yuan dynasties	1
Chapter 1	Metallurgical industry and military handicraft industry	3
I	Metallurgical industry	3
II	Military handicraft industry and its management system	9
Chapter 2	Iron and steel weapons	15
I	Projectile weapons——bow and arrow	15
II	Projectile weapons——crossbow and crossbow arrow	21
III	Projectile Weapon——trebuchet (mechanical artillery)	25
IV	Fighting Weapons	35
V	Self-defence Weapons and protective equipment	43
VI	Equipment regulations of iron and steel weapons	50
Chapter 3	Invention of gun-powder and creation of fire-arms	56
I	Prerequisite for invention of gun-powder	56
II	Invention of gun-powder	62
III	Primary firearms created in Northern Song period	68
IV	Fire arms created in Southern Song period	74
V	Fire gun created in the Yuan Dynasty	80
VI	Transmission of primary fire-arms to neighbouring countries	89
VII	Transmission of primary fire-arms to the west	95
VIII	Clarification of various theories about invention of gun-powder	101
Chapter 4	Military engineering and appliances for attacking and defending cities	111
I	Military engineering in the Song dynasty	111
II	Military engineering in the Liao dynasty	119
III	Military engineering in the Jin dynasty	123
IV	Military engineering in the West Xia and Yuan dynasties	128
V	Appliances for attacking and defending cities and obstruction materials	132

VI	Application of appliances for attacking and defending cities	141
Chapter 5	Warship-building and navy engineering	146
I	General situation of warship-building	146
II	Main types of warships	151
III	Improvement of warship engineering techniques	158
IV	Application of military engineering in naval combat	164
Chapter 6	Military technical treatises and military technical thoughts	171
I	Wu Jin Zong Yao (《武经总要》) and military technical thoughts reflected in it	171
II	Shou Cheng Lu (《守城录》) and military technical thoughts reflected in it	176
III	Cui Wei Bei Zheng Lu (《翠微北征录》) and military technical thoughts reflected in it	179
	Bibliographer	184
Part II	The Ming dynasty	189
Chapter 1	Metal casting and military handicraft industry	191
I	Development of metal casting industry	191
II	Development of military handicraft industry	197
Chapter 2	Iron and steel weapons and chariot	206
I	Iron and steel weapons	206
II	Chariot	216
Chapter 3	Formation of gun-powder theory and Improvement of gun-powder techniques	227
I	Improvement of gun-powder techniques	227
II	Development of gun-powder techniques in Europe	236
III	Theoretical research of materials used in gun-powder	241
IV	Formation of ancient gun-powder theory in China	248
Chapter 4	Improvement of fire gun	255
I	Fire-guns in Hongwu period	255
II	Fire guns in period from Yongle to Zhengde	263
Chapter 5	Input and development of matchlock and artillery	272
I	Input of Frankish cannon	272

II	Copying and Renewing of Frankish cannon	280
III	Input and development of matchlock	289
IV	Social condition of input of red barbarian gun	299
V	Input and development of red barbarian gun	305
Chapter 6	New ideas of traditional fire-arms	312
I	New ideas of fire arms of gun and artillery type	312
II	New ideas of fire arms of rocket type	324
III	New ideas of fire arms of incendiary and explosive type	332
IV	Development of theory of manufacture and use of fire-arms	340
V	Promotion of military change by new ideas of fire-arms	349
Chapter 7	Military engineering	360
I	Military walled-city fortification of Capital-city	360
II	Rebuilding of the Great Wall and establishment of its defensive system	371
III	Building techniques of the Great Wall	379
IV	Coastal defence engineering	390
Chapter 8	Warship building and navy engineering	400
I	Warship Building	400
II	Basic types of warship	407
Chapter 9	Military technical treatises and military technical thoughts	418
I	Military technical treatises from Jiajing to Longqing and military technical thoughts reflected in them	418
II	Military technical treatises from Wanli to Chongzhen and military technical thoughts reflected in them	427
Bibliographer		435
Part III	Early Qing Period	437
Chapter 1	Metal casting industry and military handicraft industry	439
I	Metal casting industry	439
II	Military handicraft industry	442
Chapter 2	Iron and steel weapons	455
I	Projectile weapons	455
II	Fighting weapons and protective equipment	461

Chapter 3	Tortuous development of ancient fire-arms	471
I	Progress of gun-powder technology	471
II	Individual gun	478
III	Red barbarian gun before and after founding of the Qing dynasty	485
IV	Manufacture and use of artillery in Kangxi period	492
V	Manufacture and use of artillery in period from Yongzheng to Daoguang	501
IV	Kinds of artilleries and manufacture of other fire-arms in early Qing period	511
Chapter 4	Military engineering	522
I	City defence engineering and stone block-house group engineering	522
II	Frontier defence engineering	531
III	Coastal defence and river defence engineering	541
Chapter 5	Warship Building and establishment equipment of Navy	553
I	Warship building	553
II	Revolution of establishment equipment of Navy	562
Chapter 6	Continuation and development of ancient military technology	569
I	Manufacture techniques of weapon and warship	569
II	Military engineering	574
Chapter 7	Military technical thoughts	583
I	Military technical thoughts before Jiaqing	583
II	Military technical thoughts from Daoguang to Xianfeng	586
	Bibliographer	594
	Summary	595
I	Distinguishing features of development of military of Industry and techniques in the Song, Yuan, Ming and Qing dynasties	595
II	Cause of decline of ancient military industry and technology in China	600
	Postscript	609
	Organizer's Words	610