

N. 1

Art of war

Ancient

1. The ancient Balastron being  
as described by Bozet in the  
George is still used at Minor-  
ca, it consists of two cords with  
a piece of linnen or net work  
in the middle —

2. The Romans wore their Swords  
for the most part on their right  
sides — This was more convenient  
on account of their shields —

3. Jan. 1789 +  
The Ancients made the Cordage  
of their great Engines of war, not  
of hemp or other vegetable subst:  
but of the tendons of animals  
— Hence were they spun or con-  
verted into fibres and spun? —

4. Gen. Melville has discovered  
the construction of the ancient  
Engine called the Onager - It is  
similar to my model of the Cata-  
pulta, only instead of a spoon  
there is a sling fixed to the end  
of the Styler

5. The great weight of the spoon  
which was of iron - broke on  
the cross beam - want of Elasticity  
in the sides - these former points  
full objections to Fotherdi's Ca-  
tapulta - It is probable the  
Styler struck on an egg within  
the Engine, or struck by a bag  
stuffed with wool or chopped straw

6. Roman Camps were first discovered in  
Scotland by Gen. Melville - From the  
reason of war - He considered what  
route a good General like Agricola  
would take - He traced them along  
the path - crossed about Perth &c  
&c. where the battle was

fought with Galgacus - In con-  
sequence of this Gen. in his return  
Gen. M. searched for and found  
several Roman Camps of the pec-  
tangular form and of a large size  
This business has been further pro-  
secuted by Gen. Peoy -

7. Ancient Bow strings were some-  
times made of woman's hair - under  
22 years of age

8. Gen. Melville thinks the Ancient  
war Galley was constructed with its  
sides above the water projecting  
outwards at an angle of about  
45 degrees - By this means the  
banks of oars may be arranged  
The Gen. has made a model ~~to~~  
agreeable to this idea -

9. The Scurvy of a Deer are said  
by the Ancient writers to answer  
best for Cordage to their Engines  
but those of a hog were preferred.

10. The Catapults and Balista  
Ancient Engines of war were em-  
ployed the one in throwing stones  
the other (Darts) - The names came  
in the time of the Emperors to be  
confounded - Twisted cordage was

the power made use of in both  
The Engine had a kind of framework  
of strong net work fixed to the  
middle of the string for holding  
the stone - The Balista was a  
great Crook bow -

11. With both oil pressure  
and increase the Elasticity  
of unusual tendons? Did the  
Ancients preserve their Ancient  
cordage in oil? -

12. The Balling Ram was employed  
by Sir Christopher to demolish  
the old St. Pauls. The ram had  
played several hours without pro-  
ducing any sensible effect. The  
workmen grew tired affirming  
that they never could succeed with

with this instrument out. Si C  
ordered them to continue, after  
betwixt for some time, a num-  
ber of cracks appeared to a consi-  
derable distance - when all of  
a sudden a considerable part of  
the wall fell down - The more  
firm and compact the wall the  
swoner will the same demolish it  
- Some horns on the head of the  
ram of no use - hurtfull by  
tearing and loosening some  
of the stones will prevent that  
solid blow to and consequently  
that vibration which is necessary  
to the demolition of the wall -  
- Josephus Desc. absurd -

13. What is the best mode of ap-  
plying the power to the hammer  
The Ancient writers are silent  
on this subject -
14. Weight of a complete suit of ancient  
armor from 60, to 70 pounds -
15. A sling is whirled twice or  
three round the hand, a dart  
or spear is pointed and vibrated  
several times before thrown -  
The muscles require some time  
to be brought to act in concert  
- Irish women cannot walk  
with the empty vertebrae, put  
stones into them in their return  
home -

16. In a work called Speculum Regale published at Copenhagen in the 13 Century mention is made of the ancient Engines of war - Engines in use immediately before the invention of gunpowder
17. Guichenon says that the Romans did not use trenches in their approaches, but that all their besieging works were above ground - Doubtful
18. The spear was vibrated some time before it was launched, did this vibration or quivering motion render the direction more perfect by the waving irregular motion - or by the circular motion - arrow pressed back - impelled on it?

19. Virgil mentions a weapon called Cateia "Teutonico ritu Soliti loci" "quae Cateas" Eneid 7 line 741 - Iron Dart -
20. Castrum is never found, but castra the reason is, that a camp consisted of a number of small divisions each of which was called castrum -
21. Tacitus in his description of the Romans under Agricola with the Scots under Galgacus, that the Scots were equal to or rather had the advantage with their missiles, but when they came to sword in hand the Romans soon beat "because says he, the Scots had small shields and large swords, the Romans large shields and short swords - swords not pointed - broad swords -

22.

Vitruvius observes that the <sup>circumference</sup> of the pinnac should be broad enough to hold a cohort ~~and~~ drawn up. But this is impossible according to the Egyptian System

23.

# Art of War

Modern

1. A Fraterne place with regular  
works of the modern form is said  
to have been discovered by the soldiers  
near the Mississippi which would  
must have been erected long be-  
fore the Spaniards settled in America.

2. The pike prepared for the National  
guards of France is 16.10 long, upon  
like that of Madagascar, not quite  
so broad, hollow socket for the shaft  
— Feet rank  $9\frac{1}{2}$  feet in length —  
3. In deep ranks or columns prefera-  
ble to a bayonet —

4. The Turks at the declaration of  
war have a military — prospect  
— similar to that of seeing the  
Franchises in England and Ireland.



22. 5. At night, in the surprise of a post - in rainy weather - broken ground - Descent - Demolish & the Muskets - is but a sorry weapon - Swords better
6. At the commencement of a regular action on plain ground - Siege - Defense of a pass - Artillery and musketry superior to all other weapons
7. Order of battle must depend on the Ground - Order of the enemy - Weapons
8. Would not cork wadding on many occasions be preferable to that in common use? Lost - Lost -
9. The bows of the Delaware and Inhabitants of New France are made of the lashed nut tree, or straight when mature, and the

- most shape of the English when they - The strings are made of the bark of a tree - The arrows have no notch nor feathers - The Delaware never use their bows in war, the Inhabitants of New France always -
10. The Delaware surprise often their enemy by night they make a noise at the end of long ropes and stealing privately into the camp and when the man is asleep the rope is passed over his head when a few men instantly drag him along to the tent and he is carried off in triumph -
11. The Delaware and indeed almost barbarous nations laugh at a sword they consider their bows and spears, as far superior to all

weapons except the musket. —

22. 12. Arms of the Chinese — Bow —  
spears — Sword — Match — Locks  
— Shields — Helmets —

2 13. Malloys Arms — Crisp. This  
is almost the only weapon used  
it is held in the hand covered  
by this means the arm is prevented  
being seized by the antagonist.

14. Crisps are poisoned by rubbing  
the blade with the juice of  
an acid, very poisonous  
and will answer better — The blade  
remains with the acid two or  
three days — When the metal  
appears suspiciously but with the  
acid it is rubbed over with arsenic  
—

15. The Malloys have a small instru-  
ment for cutting the throat, which  
they carry concealed in the hair  
it has a very small loaded handle  
the blade is sharpe narrow and  
bent. When used it is pushed in  
behind the wind pipe and a cut  
made outwards —

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Artillery

1 Does the recoil of a piece alter  
change its direction? - You should  
of a field piece be locked while  
the other is allowed to move, when  
fired, the <sup>direction of the</sup> bullet is as straight as  
when both wheels move - Effect  
of the recoil does not take place  
till after the bullet has left the  
piece - In the more ratio of  
the weights of the bullet and  
piece, this must afterwards be  
diminished by the friction -  
A 24 pounder will not have  
recoiled half an inch before the  
exit of the bullet - Pistol  
boom on an arm moving horizontally  
tally of light and the low force  
there will be a deviation of the bullet

2. When windows are broken by the firing of Cannon, the pieces of Glass are almost always found on the outside. Is not this a proof that the power exerts it self from the inside - Spring of the air in the room - when one window in each apartment is broken the others will be preserved -

3. As the heaviest parts of Gun powder fall down wards the barrels should be turned every now and then

4. The weight of a 24 Lib. Cannon ad. is 4 Cw. That of the long 24 ft. is 24 Cw., the former is loaded with 1 Lib. of Powder the latter with 6.

5. What proportion does the point Blank distance of different pieces bear to each other?

6. The advantages of Chambers in Gun <sup>and mortar</sup> are, that the fire being more <sup>acts</sup> with greater force, and the application of this force is more in a line passing thro' the Center of Gravity of the Ball or Shell, little is therefore lost by obliquity

7. In the management of Artillery the diversions of Small bullets are always greater than those of large ones, a 42 Lib. for example is now to be depended on than that of a 12 pounder -

8. From Mr. Robins' Experiments it appears that 21 Ounces of the ball produced the greatest range

9. By graining powder we can be  
more

more certain of its Goodness, by the  
admission of air among the grains  
it falls more instantaneously

— Others were great powder is as  
shining as grain. That in grain

10 The best charge for a sea foot  
is two round shot which 12  
Lb each Overcharged with  $4\frac{1}{2}$  Lb  
powder will at a moderate Distance  
go through both sides of a ship  
and seldom spread more than  
six feet

11 Is the force of the flight of a  
cannon ball affected by the re-  
sistance of the air? If shot perpen-  
dicularly upwards it will be re-  
sisted as much upwards as down-  
wards, will not the same therefore  
be nearly the same as in vacuo

12 It is said that during last  
war in Germany a bridge was  
broke down by firing a great  
quantity of gun powder upon  
the bridge

13. After a gun is fired one or  
two a quantity of soot or foulness  
in the barrel this down the  
the windage and conducts the heat  
more slowly, consequently increases  
the force of the powder

14. With a light body such as a  
lock of cotton or a bit of gold  
leaf ~~show~~ when suspended by  
a thread near a cannon, show  
whether the wave of air rushes  
to or from the cannon —

15. If a bowlong piece is widened a  
little from the muzzle to about  
a foot or fifteen inches down it is  
said that it will not scatter so  
much as when the bore is perfectly  
cylindrical —

16. Might not an spruocette be  
constructed on principles similar  
to the ballistic pendulum? —

17. It would be an advantage  
to have the bores of howitzers  
to correspond to those of cannons  
in many situations balls  
might be shot from howitzers  
to advantage —

18. What is the form of the Grenade  
pouch and how many Grenades  
does it contain? —

19. May not the Experiment of  
the antiseptical cathartics be  
applied to advantage in a scurvy?

20. Would not the touch hole of a  
mortar be better placed on the  
breach mouldings? In the present  
position it enters the mortar  
obliquely, and there is some risk  
of a piece breaking off in the in-  
side of the mortar —

21. Is not the best position of the  
touch hole in the middle of the  
cartridge? —

22. In powder mills they have  
two, sometimes three different  
sized sieves, the second sieve  
sifts the cannon powder, the  
third the pistol &c. —

23. Gun Powder charged by shaking  
it in a barrel, ~~which has been  
filled with black lead~~

24. Might not the force of Gun powder  
be increased by firing it in con-  
densed air?

25. The red hot balls at the siege of  
Gibraltar were fired with two weights  
a moist one next the powder and  
a dry one above - Balls heated  
in a kind of kiln -

26. A Gun is a Pneumatic engine  
- windows are broken by a wave  
of condensed air striking on the  
outside

27. A forty two pound shot struck  
a 12 pounder on the muzzle  
and drove both gun and carriage

over board.

28. Upon what principle does the  
heating of the piece increase the  
velocity?

29. The report of a Gun is said to  
be much increased by greasing  
the wad and rammer, it holds  
the smoke also in this case  
puts on a particular round, spiral  
figure - Powder saved - fuses -  
etc. -

30. Standing near the target, the  
noise of a Cannon ball is greatest  
at its leaving the piece -

31. The Salt Peter obtained from  
damaged Gun powder is said to  
be purer than any other -  
- Give what is the process?



32. A gun in a Casemate receiving  
up an inclined plane - Am.  
trucks taken off - Can iron Linn  
and catch prevents the pieces  
from returning till it be loaded.

33 At Gibraltar the wooden beds  
were placed on mats of rope or  
junks. -

34 Instruments for drawing guns  
for mounting and dismounting  
guns - Machines for boring  
rockets - Fire ship - 50 lb Rocket  
- King's bastion - Tower basket  
taken to pieces - Powder Ma-  
gazine.

Saw these at Wolowich on Aug.  
1700 -

35. No many balls were lodged in  
the old ground in Wolowich was  
that they a ball sometimes re-  
bounded - One went off obliquely and  
passed thro' the end of a house 300  
yards distant -

36 The ~~exp~~ mortars are now never  
cast in their beds, they were found  
to be too heavy - 1700 -

37 Orders seldom used now can  
now do the business. -

38 Suppose two guns of the same  
bore and weight, but of different  
length, will the recoil be the  
same in both?

39. If the mouth of a cannon be  
wetted or greased, for part of the  
usual charge of powder will

make a greater report than  
the whole - perquisite -

40. When large and small shot are  
mixed they go to different Distances  
also scatter more - Patent shot  
more even, better polished, con-  
sequently truer -

41. By observing the whirling motion  
of the burning fuse of a shell  
it may be determined which  
side of the muzzle of the mortar  
the shell was struck at its  
leaving the piece -

42. A 10 inch shell with 2, 9  
of powder in the chamber, at 35°  
elev. ranged 1000 yds. - time 14" -

43. There are in every mortar  
battery two traverses  $\square$  placed  
in such a position as to  $\square$  defend  
from the shells of the enemy, guns  
should there not be the same in  
a gun battery?

44. The velocity of a bullet may  
be so great as to render its range  
shorter  
less than with a less charge  
of powder - A bullet shot per-  
pendicularly into a vessel of  
water with a given force may  
pass thro' the bottom, but with  
a greater force will not penetrate  
thro' the water, but will be stop-  
ped -

45. There small shot discharged  
with a great charge of powder

with matter and not go so far  
as with a leaf -

46. The Gunpowder may be shot from  
an Engine constructed on the same  
principles as the Caliber -

47. A round ball taken out of  
a wound is frequently found  
perfectly round. It is not therefore  
altered in its shape by the re-  
sistance of the air - From the  
the ancient leaded bullets for  
the Engines which was said to  
have been melted could not  
have received that appearance  
from any change of shape  
arising from the resistance of the air.

# Artillery

48. Method of elevating and depressing  
a Gun by a kind of Spirit like  
a lock snail on the hind axle  
of the carriage -

49. The principal objection to the  
Gun Powder is the breaking  
of the line -

50. A light Field piece recoils on  
even ground about seven feet

51. When the enemy is forming  
behind a hill round shot with  
a small charge of powder and  
great elevation should be thrown  
among them.

52. As the enemy advances round  
 that may be fired obliquely  
 at his ranks, in retreat.
53. From 600 to 350 yards  
 round that may be fired at  
 from one to two dozen elevates
54. Care that fired at the center  
 of the line must now be used
55. When grape shot with a round  
 over it used against an enemy  
 very near, the quickest possible  
 firing may take place
56. Care that at the distance  
 of <sup>170</sup> 170 yards, when double loaded,  
 is superior, in effect to musketry

- at this distance  $\frac{1}{2}$  of the shot  
 is found to have effect.
57. The Nests of care that should  
 be ranged regularly, they will then  
 diverge less.
58. The Number-stall for stopping  
 the vent. Horn-plate or handle  
 of the elevating screw of a field piece
59. After half a dozen shots, the  
 lead-book must be introduced  
 to clear out any bottom of  
 cartridges that may remain.
60. When for making a shell  
 burst when it strikes the  
 ground. Let an iron cylinder

The Drive head into the empty  
fuse, on side of it projecting and  
a ball of wood placed on this  
a few inches from the shell.  
Let the cylinder be charged with  
a slow fuse composition. The  
shell to be made thicker on  
the side of the fuse hole than  
the opposite in the proportion of  
2 to 1. When the shell is fixed  
the fuse will descend foremost  
and on the wooden ball striking  
the ground the cylinder will  
be forced into the shell and ex-  
plode it. Small holes may be  
pierced in the cylinder to render  
the success more certain.

Naval Tactics

1 <sup>Wants</sup> Will a general be better placed  
for the service than his own  
ship during an action?

The line better seen - Good Now

2 The sea line Capt. M. B. Munk  
sup<sup>r</sup> preferable in most cases to the  
1782 weather line particularly for the  
outgoing fleet - You must get  
down to attack the sea line, than  
beer away large, than get down.

The line can see the weather  
line more distinctly than a contrary  
smoke of the sea line rises, and  
you sooner see the enemy below it  
than on the weather side - Helms  
men can see better - Decks of the  
sea line less exposed - When it  
blows the lower parts of the weather  
line shut - Weather line cannot  
escape - Disabled ships removed

- with great difficulty from the weather line - Capt. M. B. - would always wish to attack a French man on the Lee bow
3. It is safe to board on the bow then on the quarter, on the former position your quarters & guns assist greatly -
4. A spruce is made fast to the cable <sup>from</sup> near the bow when the ship is at anchor it may be down in a quarter of an hour or ten minutes. If the spruce lies on the side of the enemy it is necessary to keep it as much down in the water as possible by hanging pieces of iron to it

5. When the ship is to be moved across the channel it may be done by two anchors, a head and a stern -
6. Capt. M. B. made approval much of the Carrouades, his improved the carriages, his made the fixed part moveable and longer - We fired an 18 lb. with Carrouade shot 72 guns some balls, the distance was near half a mile very few fell most of this I mentioned the objections of this hunting the ports by their being so short, he replied that in this respect almost every gun was a Carrouade as they often were not and sometimes would not be run out of the port. -

7. Capt. M. B. agrees with me in  
opining the charge and the windage  
he always begins with the reduced  
charge  $\frac{1}{3}$  proper round shot, single  
as a Dictum, and two when near  
the charge the same in both.

8. Capt. M. B. was a match was-  
trow of a wire with two or three  
strands of quick match around it

9. Capt. M. B. says that those  
signals which are known to all  
Europe ~~was~~ ought to be the most  
private - such as the Signal for  
battle, for all cruises, for Lacking  
&c. -

10. The Signal for battle is always  
hoisted below the Admirals flag

11. Capt. M. B. never puts powder  
in the boxes, he holds the fire  
of his artillery in contempt -

12. He blames the English for en-  
tering too readily into action  
says he would always wait to  
receive the enemies fire - near  
should be down - advantage

13. The Royal George Capt. M. B.  
says was lost by great misma-  
nagement, her lower ports were  
left open and the guns on the  
lee side run out while the  
weather from wind drove in to  
midships, to make her heel for  
the purpose of making some light  
repairs under water - A light  
was hoisted on board - This together  
with a sudden squall of bad weather



on her beam ends, she fell and  
went down in eight minutes  
on the first attack the men were  
ordered to the lee side to haul  
in the ~~guns~~ lower Deck Guns and  
if possible shut the ports, this  
made the vessel still but never  
Had they run out the guns on  
the weather side, they would pro-  
bably have saved the ship

Admiral Boscawen perished  
in his Cabin - It was probably  
better for him - had he lived  
he could not have enjoyed peace  
of mind -

14. Every Mammock on board a ship  
of war is allowed 14 inches in breadth  
and 6 feet in length -

16. The Keys of the Powder magazines  
are always kept by the 1<sup>st</sup> Lieut.

17. Every man the moment he enters  
a ship of war pulls off his hat

18. A waterman to keep a gun  
always horizontal whatever be  
the incline of the ship -

19. An English man of war always  
demands in return the same  
number of guns with which she  
is taken

20. The Portuguese keep always  
one ship of the line and some  
frigates cruising off the Straits of  
Gibraltar to awe the Algerine  
Rebels, while Britain purchases  
the protection to her ships by a  
great sum of money -