

FIRE ARM INJURIES

Types of fire arm weapons:

I- Breach – loaders, loaded from the breach.

II- Muzzle – loaders, loaded from the muzzle .

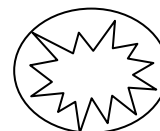
Muzzle loader divided into :

	Non-rifled weapon	rifled weapon
Bore	Smooth	spiral
Missiles	Shots	Bullets
Inner wad	+	-
Outer wad	+ Except Schneider& Remington	-

A- Rifled weapon:

☞ having rifling.

The riflings are a longitudinal ridges alternating with grooves, running in spiral manner on the inner surface of the barrel. →the bullet will penetrate more.



☞ These are the most commonly used fire arms.

Types of rifled weapons:

According to the length of barrel

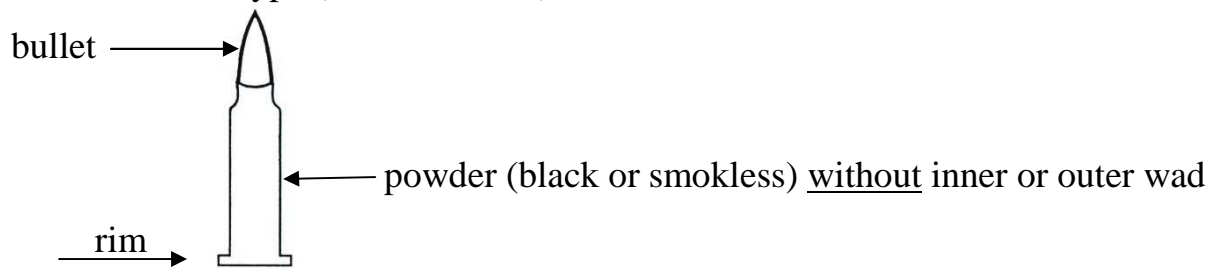
1- Long weapons: (Service rifle):

☞ The bullet: new jacketed long narrow bullet
jacket :made of nickel of cupro-nickel .
core : lead .
the tip : aluminum.

☞ The powder : smokeless.

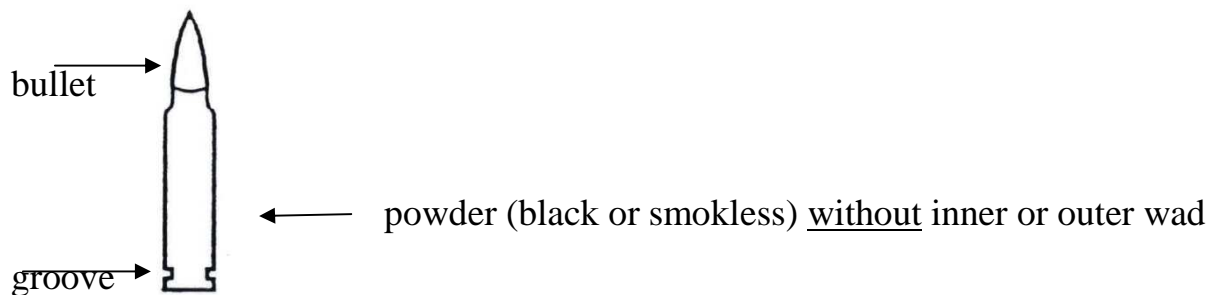
☞ The cartridges of the service rifle longe ,narrow & made of brass with high shoulder are two types.

- ❖ the first type (non automatic) has a rim in the base.



lama tn6la8 al bullet hey ali tet7amas o t6eer laken al cartridge yb8a o laz m
enty tshelenaha

- ❖ the second type (automatic) has a groove at its base.



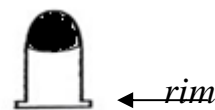
the groove is present to give a good grip to the ejector.

Y3ni lama tn6la8 al bullet hey ali tet7amas o t6eer laken al cartridge y6ee7 fel
ar'9 bel7ala 3la asas automatic

2- Short weapons

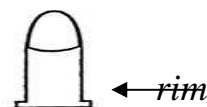
A- Revolver:

The bullet : rounded



- ☞ Old (non jacketed bullet just lead & sometimes antimony is added to harden it) black.

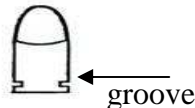
- ☞ New (jacketed bullet) with :
cupro – nickel (red)& the core is lead.
nickel only (white) & the core is lead.



the powder :

may be black or smokeless.

B- Automatic pistol.



the bullet : rounded new jacketed bullet .

the powder : is smokeless powder .

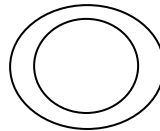
Remember :

The powder in automatic pistol & service rifle → is smokeless only .

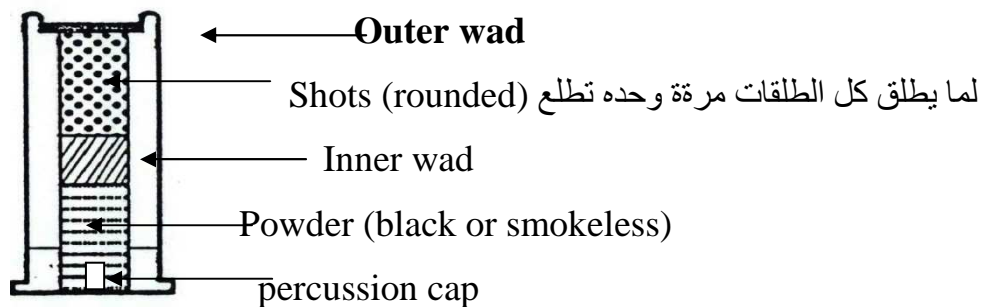
The only non- jacketed bullet is → the old revolver .

B- Non rifled weapons:

Smooth bore



1- Sporting gun:



- a- Percussion cap : lined by the Igniting powder , whose composition is
 - ☞ mercury or antimony fulminate (a highly flammable subs.)
 - ☞ potassium chlorate which yields oxygen.
 - ☞ glass powder which gives the rough surface to form the spark.
- b- Powder :could be black or smokeless .
- c- Inner wad : thick made of felt or card-board → compressing the shots& outer wad.
- d- Shots : rounded made of lead (hand made or machine made)
- e- Outer wad : thin made of compressed card-board. The main function is to keep the shots from falling.(y3ni just closing)

The bore usually 12- 24 .. depends on the type of animal to be shoot.

remember :

cartridge : empty without missile .. made of brass **NEVER ENTER THE BODY**

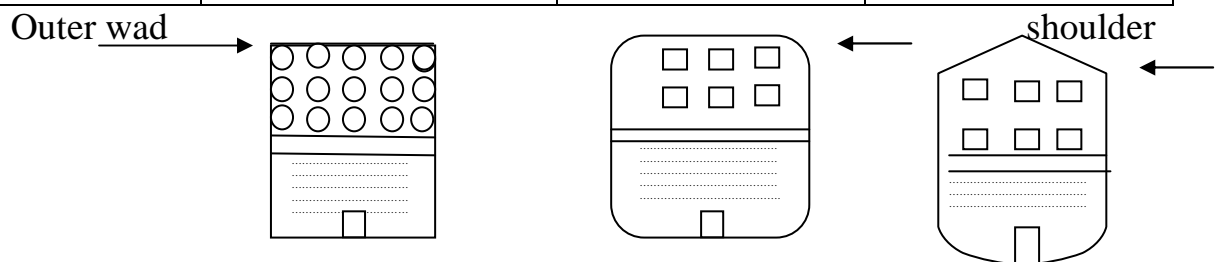
Projectile : cartridge with missile

2- Ghaffir guns:

Greener, Schneider and Remington. They share in certain characteristics:

1. The whole cartridge is made of brass.
2. Its upper end is serrated and mechanically closed.

	Greener	Schneider	Remington
Powder	Smokeless	Black	Black
Shots sub.	Cupper	cupper	Cupper
Shots shape	Rounded (bigger than sporting guns)	Semi-cubical (called :slugs as)	Semi-cubical (called : slugs as)
Shoulder	No shoulder	faint	Distinct
Outer wad	+	-	-
Bore (العيار)	12	16	28



Bore or caliber: gaffier guns having different bores. Each one has a fixed number which is written on the cartridge brass bases to the side of the percussion cap. The commonest calibers are 12 and 16. The caliber is estimated as if one English pound of lead is divided into 12 equal balls; each ball will have the same diameter of the weapon or cartridge number. Or the diameter of caliber 16 cartridges equals a ball of lead weighting 1/16 of English pound.

بالعربي يعني اجيب 1 كيلو مثلا رصاص واطلع منه 16 كورة .. واجيب كيلو ثاني اطلع منه 28 كورة
ايهم اكبر حجم الكورة الي من 16 ولا الكورة الي من 28 ؟ 16 اكبرر اكيد

So caliber 12 is wider than caliber 16 & caliber 16 wider than caliber 28.

Types of powder:

a- Black powder: This is composed of:

15% carbon,

10% slupher

75% potassium nitrate.

On ignition one volume of black powder give 300 volumes of gases, leaving an **alkaline** residue composed of carbonates, bicarbonates, sulphides, thiosulphates, suplphates and thiocyanates.

b- Smokeless powder: It takes different colors and forms. It composed of nitroglycerine 60%

Nitrocellulose 35%

Mineral gel 5%

On ignition one volume of smokeless powder gives 900 volumes of gases. So smokeless powder is stronger 3 times than black powder. Thus all modern powders are of this stronger type. It gives a **neutral** residue containing nitrites & nitrates → give a positive diphenylamine test (blue color)

**مش مهم النسب .. بس تركيب المواد مهممممم

v.imp:

black powder : 300\ 1 volume

smokeless powder : 900\1 volume

Products of firing gun :

On firing we get a blast of gases accompanied by flam, smoke, unburnt powder, wads and shots or bullets, each of which has a distinct effect on the target, these we all associates of the projectile come out from the muzzle.

قبل نبدا .. الشي الثقيل يمشي مسافة اطول .. الشي الخفيف يمشي مسافة اقصر

- 1- The flash of light.
- 2- The gases → very light → move for a short distance → 15cm → cause tearing of the skin.
- 3- Flam → moves about ,5 BL (according to the length of barrel) يعني طول المسدس مثلا متر حيمشي هو نص متر – طولة مترين يمشي متر → cause burning .
- 4- Smoke → heavy → moves about 1-1,5 BL → cause blacking of the skin → easily removable by washing.
- 5- Un burnt powder particles → 2-3 BL → striking irregularly → tattooing.
(2 → if the powder is smokeless) (3 → if the powder is black)
- 6- Internal wad → up to 3m → penetration of the body.
→ 3-10 meters → It strikes the skin causing circular abrasion or contusion.
- 7- External wad (outer wad) → up to 1m → penetration
→ 1-3m → abrasion or contusion.
→ 3-10m → no effect
- 8- Shots. → come out from the muzzle close together forming **one** mass producing **central hole** up to 2 meter, then start of disperse with central hole diminished in size until it disappears at full dispersion which occurs at 4 meters.
4 meters → the diameter of dispersion area 16cm
6 meter → is 32 cm
8 meters → is 50cm
10 meters → is 60cm
20 meters → shots cover all the body and lost of their penetrating power.

** the longer distance → the space between the shots increased → the power of penetration decreased

- Bullet: This is a single missile does not show any dispersion. The distance of firing is estimated by the power of penetration of bullet. may show also deformities due to striking some hard objects (e.g. bones).

If a man standing about 2 m a way from me .. & I shoot him using a sporting gun (the length of barrel about 1 m) the effect of :

- Gases → no effect
- Flam → $1 \times 0.5 = 0.5\text{m}$ → no effect
- Smoke → $1 \times 1.5 = 1.5\text{m}$ → no effect
- Un burnt particle → $1 \times 2 = 2\text{m}$ → he will get tattoo ☺
- Inner wad → will penetrate .
- Outer wad → cause abrasion or contusion.
- Shots → all the shots will enter the body as a one mass producing one central hole .

Powder marks:

1-gases

2-flame

3-smoke

4- unburned particle

Associates of projectile in non-rifled:

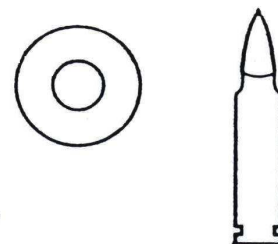
Powder marks + Inner & outer wad

Done ☺

GOOD LUCK

Reham almuhaya

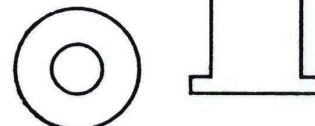
Loaded cartridge of long , rifled , automatic
weapon ; non - fired .



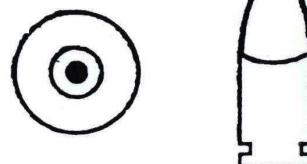
Loaded cartridge of long , rifled , non - automatic
weapon ; fired .



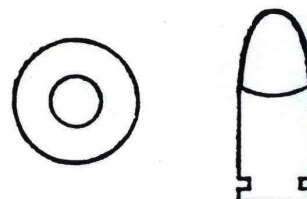
Loaded cartridge of long , rifled , non - automatic
weapon ; non - fired .



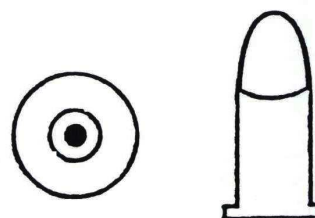
Loaded cartridge of short , rifled , automatic
weapon (automatic pistol) ; fired .



Loaded cartridge of short , rifled , automatic
weapon (automatic pistol) ; non - fired .



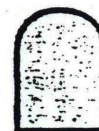
Loaded cartridge of short , rifled , non - automatic
weapon (Revolver) ; fired .



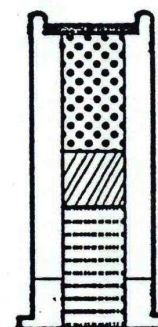
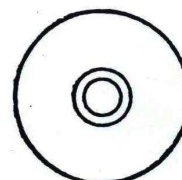
Non-Jacketed bullet of short, rifled non- automatic.
weapon; fired.



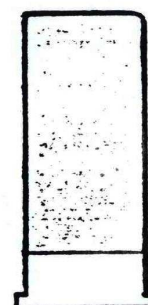
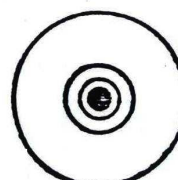
Non-Jacketed bullet of short, rifled non- automatic.
weapon; non-fired.



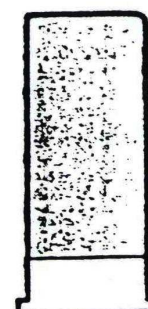
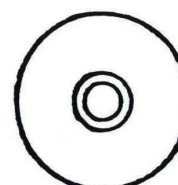
Loaded-cartridge of long , non-rifled, non-automatic.
weapon (sporting gun) ; Non-fired.
It is made of cardboard with brass base.



Empty-cartridge of long , non-rifled, non-automatic.
weapon (sporting gun) ;fired.
It is made of cardboard with brass base.



Loaded-cartridge of long , non-rifled, non-automatic
weapon (sporting gun) ; Non-fired.
It is made of cardboard with brass base.



DISTANCE OF FIRING

