3-21-1865

Jefferson Medical College Lecture Notes

John Hill Brinton

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Lecture 24, 21st Nov/65.

Velocity of a Ball varies.

Initial velocity of elongated rifle ball about 1000 ft. per second.

Remaining velocity.

Terminal velocity.

(To Armstrong of U.S. Navy)

Having studied briefly nature of projectiles, we are now prepared to study the character of the wounds they produce.

Guns of Wounds. 1st From the projectile itself, an effect of projectile may be combined with 2d A Foreign Substance. (a) Clothing, cap, paint.

(b) Accoutrements by ball, canton, musket, lance, etc.

(c) External Objects, e.g. Gravel, stones, boulders, etc.

(d) Portions of human body, attached to or coming in contact with.

(e) From particles of powder.

Possible effects attending wound of human body by projectile from small-arm.

I. A ball may enter & lodge without fracture of bone.

II. By emerge.

III. By lodge with.

IV. By emerge.

V. By one opening; divide on a bone, with or without fracture; or emerge by one or more openings.

VI. OR. Having divided, split or without fracture, one or more portions may lodge; and one or more portions emerge by higher or multiple exit wounds.

VII. A ball striking external substance may divide in fragments, enter body by different openings, producing varied effects.

VIII. A ball entering, with or without fracture of bones, may emerge by another passage; go through the mouth, or arm, or be discharged through fistula.

IX. A ball may emerge at wound of entrance.

X. A ball may explode in the body.

XI. A ball may graze or plough, a produce delicate wound.

XII. A ball may contuse.

XIII. A ball may break in cell, produce severe wound, become infected, perforate a bone.
Changes in shape of ball. Immeasurable, may be split, regular, or irregular, by cone, or flattened, or truncated, or flattened at base. Explain pleochroic segments of sphere. Explain this illustration in concluding...
Arriving of the U.S. Army during war 1861—

1. Three months men armed with old smooth bore musket, of 1822 (cal. 44) altered to percussion lock, or the smooth bore of 1842, which was new percussion lock. Three of the N.Y. State Inf. regiments had the Springfield rifle of 1855, obtained from the State Quota. Regular Inf: all had the Springfield rifle of 1855.

2. First 500,000 men. 250,000 had Springfield rifle, which was all that could be got in that year—Reserve of from there the Eng. Regts. in the West were supplied, and all the rest of those regiments went were distributed to A. of Pott's Men, the rest remained of the Army had smooth bore arms, of which about 125,000 were French foreign make, the balance American. At first about 45 of the men had smooth arms.

The objection to the smooth bore, saw, which was all, about to procure it, then rifle, was its large caliber, the heavy ball. The men could not carry sufficient ammunition—The preferred caliber large, 50, or now, 50 Eng. 50 caliber, 57, as in many of these arms, we could, we intended to use. Effective Range improved 2.5 Sp. Market, at 4700 yds, the limit of ordinary vision, but will hold at from 1100 to 1200 yds.

Now, the large projectile is almost entirely used.

Cavalry. In early part of war, Sabers, & carbines. Subsequently Sharpe Carbine was first as they could be made. Rule: this year, only sabers to the five arms, the arms and long lances introduced in 1863, at Stone Bridge: E. Ferguson, F. Battle. 1st, 2nd, 3rd, etc. then all rifles, new mixed.
Now consider phenomena of entrance of ball; of its exit; of its course; of its
decay; of its lodgement; of effects of spent ball. These are influenced by 
shape & material, but especially by shape and
velocity of ball. Examine facts relating to.

Entrance of Exit Wounds.

Discussion concerning. Old views as to invasion & erosion, through
being from sane to deranged madness, & vice versa.

Character of entrance wound of round ball (smooth) at moderate range,

Circular, slightly larger than ball, raised, pointed edges.

Exit wound of same ball, larger, more irregular.

Of round ball from rifle, apt to be lodging tissues more cleanly

Cut, sharply rounded.

Of round ball from a Cilli pistol, punched like crisscross.

Elongated Rifle Ball. Character of ball depends

Somewhat upon how the ball strikes, whether head foremost, or
at-right-angle to surface, or at an angle, or laterally.

In first case, marginal, irreg. shaped a triangular-circular, round

That necessarily longer than diameter of ball. Sometimes large in

Latter case, round. Probably influenced by velocity of ball, & its

Impact relation or its long axis.

Entrance wound where the elongated ball on a Naturey Surface,
or at an angle.

Linear wound may occur over a bone, or in tissue or hard

tissue; where a ball is striking at an oblique to its own

Axis. Examinations to render from Access, Blanche.

Wound of Exit. From rifle, rifle ball still more irregular than

Round of entrance. May be greatly injured by fragments of bone, etc.

In the ball may be reflected in its course.

The above remarks as to wound of entrance & exit, only apply to the perfect

Ball. If the ball is obliquely or deflected; or under a great deflection
or deflection, the wound may vary. Burns appeared.
null
Course of Balls. In general supposition straight.

Deflection of Round ball, a Conical one. Curve, glancing on bone, or hard tisue: perhaps Phrenic action of muscles.

Apparent deflections caused by change in position of Soldier.

Track of Elongated ball, large and irregular, with great destruction of tissues. Separation of Subcutaneous cellular tissue, around wound of entrance.

Effect of this Ball on Bone. Shattering, comminution, separation, with or without leisure - Tissue also not often crisp especially in young bones the ligament between the Shaft & Epiphys is.

Elasticity of skin, may present Ball of ball, which may rest under skin.

Muscle. Great destruction - Subsequent Atrophy.

Nerve - Vein - arteries, escape of the latter to wound ball wound, not so often from the Elongated Ball.

Lodging of Balls. Generally at low velocity. Not only confined to round balls, Elongated balls frequently also.

Sagaer

Metal as round shot - 12 pdr. Shell shot, 1 fragment of shell - Foreign substance may lie, alone or combined with balls.

Cry Of - in left parts - Breast ball in back, in neck.

in great destruction - Heart's, case, bone in thoracic parietes, & in hips. These are exceptional cases, they generally give rise to irritation, inflammation.
and suppuration - long incisions may result, as from presence of clothing.
 lodge in bone to other bony parts, cartilage, nerves.
 loose debris of bone. Suppuration - gangrene, 
 the Pyramids. In mult cavity & epidemy 
 In all cases to be extracted.
 Relation probe forceps &c.

Hemorrhage. Not so rare, nor so common.
 on battle field serious shock - arterial, according to size of vessel.
 Round ball may crush artery. Elongated case. Shell injured.
 Examination of dead on battle field, most
 requires to head, or from internal hemorrhage 
 in thoracic or abdominal cavity.
Nashville lectures
Also went to part in Jefferson College Reunion. 
1871.
Mr. President & Members of the military Medical, Chirurgical Society of Nashville.

I appear before you this evening in response to the very flattering invitation which has been recently tendered me by this Society, and with the purpose of entering upon a brief series of discourses concerning certain branches of surgery, in which you and I are alike interested.

In selecting a subject, the examination of which might occupy us, I trust profitably for a few evenings, I have experienced but little difficulty. The theme for our studies is a fertile one, and I suggested by our daily observations.

For never in the history of Military Medicine have such facilities been offered for profit, social improvement, and for the advancement of our craft, as those which we now enjoy.

It behooves us then diligently to glean, but carefully to garner those precious experiences which so unexpectedly spring from the rank soil of the crumoned fields, over which our pathways lead.

For Gentlemen, it is only
Upon the field of battle, or in great military hospitals, with their thousand inmates, that the student of surgery of war, should look to find his school. 

Quaintly, yet severely was it said by that apostle of our art, good old Crambise Pater, that “For the Chirurgeon, the testimony of the ever-faithful Eyes, and Senses, availeth more than the constant reading of books, or the teaching of teachers.” 

As it was, when Pater wrote, three hundred years ago, so is it now. The experience of the campaign does, in truth, avail more than all the tasty rhymes of the poet. 

Received then from this standpoint of practical experience, and daily and repeated observations, ample indeed have been the opportunities of our army surgeons, and wisely should their records speak.

Set us then, Gentlemen, Endeavour, so to profit from our lessons of the present, that hereafter professional generations may turn to our book, as we in our own day, look back upon the labors of Artesian, and of
Flight of a Ball

Influenced by:
1. Faulty Construction of air
   1. Gravity
   2. Air resistance
   3. Atmospheric resistance

Three lines:
1. Line of fire or sight
2. Trajectory line of sight
3. Trajectory
   Point Blank:

1. When loan flight acts largely
2. When flight acts greatly
   1. When ball strikes ground
   2. When ball strikes ground

Initial velocity of a ball, about 1000 feet per second

Terminal velocity:

Position of ball in relation to trajectory influenced by centre of gravity of ball

Deviation of balls - collapse of base
The Grafton: the new universal application to the arms of the infantry. Beden was first modeled at Noyon in France about 1650. It was of bad and leaded the charge. The gait of attack by charging with the Grafton was practiced for the first time at the Battle of Spurs in 1703. The Grafton is originally attached to the piece as a clumsy contrivance on the jaws. Simply a block blade, a curving handle, and with the muzzle of the piece in the same manner, the jaws could be led up to the breach, determinedly. Another tension to the muzzle was afterwards established. Is the projection of the Grafton too slight? Quite a change in the taste of the barrel field. By the Grafton, our infantry commanders have another to instant effect, the use of powder, which has not frequently been the case.

The powder was mixed with a series of spices, according to a formula that had been worked out by the

In Germany the manufactory of the gun had been at the peak of the century and a little later. By the year 1545, the armur's of the German armur's of the century of the Europe, as well as the armur's of the German armur's, was the armur's of the century of the armur's. The armur's of the century of the armur's, was the armur's of the century of the armur's. The armur's of the century of the armur's, was the armur's of the century of the armur's.

The armur's of the century of the armur's, was the armur's of the century of the armur's. The armur's of the century of the armur's, was the armur's of the century of the armur's. The armur's of the century of the armur's, was the armur's of the century of the armur's. The armur's of the century of the armur's, was the armur's of the century of the armur's.
The invention of gunpowder, at all dates as far as European nations were concerned, occurred probably during the 13th century. The earliest guns were small, employed for hunting and defence. The first large guns, known as cannon, were introduced in the 14th century. The Early firearms were not effective against armored plate. They lacked the force to penetrate armor effectively. Even in the 16th century, the Artillery and early firearms were inaccurate and unreliable. The accuracy was improved in the 17th century with the introduction of bombard.
Ratio of shot to shot... Prussian ... and effective in the combat;... houses... ideal to... However, it is... between the number of shots fired in battle, and the... The ratio in the... has been... from 2,000 to 32,000 bullets fired, in very mean placed... In the American war... that the French expended 200,000... In my own... is... The ratio of shot... shot... made it far... (The most what I can obtain)

Chamber of American 125 American .45 calibers to each soldier... Appendix, 1863; March 1863

The rifle, as... the barrel; and in... a number... of... (or... from the... as a unit... The object of... to... The bullet... the bullet traverses a... trajectory motion upon its own axis.

Muzzle, at the difference between the diameter of the projectile, and the caliber of the piece. Where this... The... the barrel... is... bullet, thus losing both velocity and integrity of course. The greater the... the greater the... which is the... the greater... the deviation of the projectile from its own course. The... Muzzle... only be destroyed...
In 1828, Mr. Bellocque at Chartres invented a form of
which all male church construction, to an extent to
effect the streets by a great and permanent change in the
first class of arms development. This rifle has provided with
a chamber for the charge of the chamber than the remainder of
the gun. The bullet made use of can be a closely fitting round
bullet, which can be easily added inside at the muzzle, t
allowed to the end without touching the breech chamber in front
of the chamber. It was then struck heavily or few times shortly
with a sharp command for the front of altering the ball
to a few shots from a heavy rammer the rammer is
a pump. The ball occurs to enter the back of the rifle.
...
which in general terms is the interior chamber of the rifle, as far as its
which has been long been known but the principles of which has been
imperfectly understood. The first rifle is said to have been made
in Vienna about the year 1570. It proceeded from a thought
found parallel to the Capri of the bow, but which was indicated partly
by the making a Lacer in leading lightly-poled bells. It was afterward
found that the efficiency of the gun could be increased by the hands
by confining it to the effect of a grooved, a small twist
of the Drury Grand Bute, or the value of the rifle being
much increased by making the groove from three lips but three concealed
lips been recognized. Its efficiency, hence, as
its efficiency with the commencement as a weapon of
by yet concealed, greatly
by military authorities, were firmly committed.

True that during the last century attempts were made to introduce the rifle and musketry
the bodies of riflemen, breeches, a treble were attached to all large
carriage, but these commands, although available as skirmishers, could not
be made to act in the same manner as the infantry of the time. The rifle
rifles, though heavy and severe, was limited with difficulty, and after a
few discharge, failed from the effects of the ignition of the powder.
Its effect a certain delay for the use of muskets and pistols, and
was largely employed in the American conflict in 1776. During this
as for the use of the rifle was drawn in the French armies,
although every effort was made to hinder the French soldiers to use them
in the battle. It will stand for years (1862)
that the rifle itself is by no means a modern weapon, although the adaptation to it of a prospective feature for ground
marking was of considerable interest. The problem to be determined was the construction of barrels for prospective
rifle parts to be loaded at great velocity, a barrel could be made in
it to the rifle of the future without control.
The French officer, hearing to the sound of a bugle, directed the men to make a charge. The enemy's line was in the way of their advance. They charged at a run, each man carrying a musket and a sword. As they approached, they fired their muskets and slashed with their swords. The French infantry charged straight at the British lines, causing the British to retreat.

Firing by volley at short range was used by both sides. The French muskets were inferior to the British, but their numbers made up for it. The French soldiers were well trained and fought with great determination. The British were caught off guard and struggled to keep up with the French attack. The battle raged on for hours, with both sides suffering heavy losses. In the end, the French emerged victorious, having gained control of the battlefield.

The British suffered heavily, with many soldiers killed or wounded. The French gained a significant victory, but at a great cost. The battle was a turning point in the war, and the French were able to keep pressure on the British forces in the weeks that followed.
The M1903 rifle, also known as the Springfield pattern, was called from the arsenal at which Chief Engineer Ira T.甜美
Manufacturers. The barrel of the arm is about 40
pounds in length and is caliber .30 inch. The proper of the
front sight is mounted, and is being adjusted to the
depth of the 14-inch long barrel. The front sight
uniform, another being the three in six feet
(30 inches), was originally sighted for 1,000 yards, but
for the present it is for 1,500, 2,000, and 3,000 yards.
Character of the new small arms, or projectiles, employed by the leftists during the Rebellion.

   When the Government of the Rebellion began, the Government of the Rebellion employed a new kind of projectile, the "Minie bullet," which is about twice as large as the old bullet, and is intended to explode on contact. It is a smooth, cylindrical bullet, about 2 inches in diameter, and is made of hard iron. The Government used this bullet extensively.

2. The Effect of the Minie Bullet.  
   The Minie bullet is made of hard iron and is about 2 inches in diameter. It is designed to explode on contact, which makes it highly destructive. The Government used this bullet extensively.

3. The Minie Bullet in Action.  
   When the Minie bullet hits a target, it explodes, causing a great deal of damage. The Government used this bullet extensively.

4. The Minie Bullet and the Civil War.  
   The Minie bullet played a significant role in the Civil War. The Government used this bullet extensively.

5. The Minie Bullet and the Future.  
   The Minie bullet is likely to remain in use for many years to come. The Government is likely to continue using this bullet extensively.
Ober-Magdeburg
Ober-Flensburg
Aboare
Lant-Orland
Lyng Boys

Etharam
Head
Chast
Belly

Deep
Desarman
Gen & Prophewer
Worship Transeuption Journal
Gentlemen, Fellows of the College,

By the terms of stipulation of the Charter declare

that, it is provided that the same Council

of declared to be annually delivered under that

Document, shall be upon some point or

points connected with surgical pathology.

The topic which I have selected for

our consideration in the ensuing course of

that of "Gunshot injuries."

But although this subject in itself, is one

of most fertile import, I must yet confess to

a certain hesitancy in making it the theme

of my discourses before you now.

Time was, not very long since, when

the demands and exigencies of a great war

furred most strongly upon the profession the

consideration of this class of accidents— But

happily for us that time has passed away;

The people's mind is no longer obsessed with

the devastations of war, or


Placently to devise more ample means

for the destruction of human life,

For now our land is at peace.

Time, with his all healing wings, has already
Already hushed many a scene left ringing
and festering from civil strife — Harsh feelings have softened, bitter memories
have dimmed — The events of the
Nation's struggle are bye-gone, and the
rapid development of the Arts of Peace, had
all but obliterated, the impress of the
savage of war.

In a word, the curtain has gone down
weary and
upon that
vivid drama of blood
and suffering — the conflict of fifty-one.
The actors have left the stage; the audience
have dispersed; the lights have been turned off.
And actor and spectator would willingly
forget that such a tragedy had ever been
played.

Just as a surgeon, the war has been full
of interest, an interest which I hope has not
yet died away — For it has displayed before
our eyes, great classes of accidents, of which we
otherwise would have seen but few.

That it is to the misery of these casualties, that
I now ask you invite your attention.
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\[ \text{Total} = 99.90 + \]
1. Arm & Proximities
2. Theory of Flight of Bullet
3. Effect of Ball Sticking a Soldier - Symptoms - Shock - Death
4. Exit Local Effect on Tissues - Entrance Exit etc.
5. Thimerin - Bone + Tissues
6. Head
7. Lung
8. Jelvy
10. Secondary Hemorrhage - Tetanus
11. Osteo-Myelitis - Gangrene - Empetelas - General Rigor - Transportation
Well supplied as to arms, ammunition, as early as the
1861. The Enfield rifle at that time had been adopted in a large
number. Very many of them were armed with the Blunderbuss or Spencer rifle, a forma
weapon, and one which a moment's hand carried
there into the hands of
At a
late period in the industrial process of the North developed
and the manufacturing process was instituted to the arms
of them, as for example the harper coats which contained
the snaphance gun machinery formed in the 1871
Harper being and d
The
were turned out—altered in many cases of the Harper coats which contained
the snaphance gun machinery formed in the

At the commencement of the

en was a favorite branch of the Army
With the enlistment of the men, must

were all mounted. There were

the Lecture Room, and not infrequently each

were carried in addition a double
snaphance powder piece. The

rule which is action quickly at the head of the

The confidence of each man was for

and implicit in them

at a later period. There in the late to hand in hand

Conflict, the double charge of the

Defensive Arms—The variety of defensive arms have been employed in and during
the

were made by

Company to the

in their state. A number of these were

were often

One of them, famed, and they all

were prised by them carried to far, and implicit in them

not on a board. They in the late to hand

Confident, the double charge of the

- S. C. SHERRY.
The small arms projector used by the elite infantry was of near Imperial.

The critics tire of mounted and battle饲养者. The curious of the infernal variety of belief & contradistinct bullshit.
The Union Army of the South fought over 110,000

The Confederacy was originally composed of a small number of Southern states, which included Virginia, Tennessee, Arkansas, Missouri, and a few others. The Confederate Army, however, grew in strength as the war progressed. The Union Army, on the other hand, had a much larger and more experienced force.

The battle of Bull Run, fought in 1861, was a major turning point in the war. The Confederate Army, under the leadership of General Robert E. Lee, defeated the Union Army, led by General George B. McClellan. This victory gave the Confederacy a significant boost in morale and confidence.

The war continued for another 4 years, with both sides suffering heavy losses. The Union Army eventually emerged victorious, with the help of the Union Navy and the Union blockade of Southern ports.

The war ended in 1865 with the surrender of General Robert E. Lee to General Ulysses S. Grant at Appomattox Court House. The war resulted in the abolition of slavery, the establishment of the 13th, 14th, and 15th Amendments to the U.S. Constitution, and the reunification of the United States.
May 7

Mr. Secretary: 

I am to report that our troops have been ordered to cross the river. The bridges are ready and the troops are crossing. 

I have ordered the artillery to be loaded and ready for immediate use.

The enemy's positions are reported to be strong and well defended. We have reinforced our heavy artillery with additional siege pieces. 

The troops are in good spirits and ready for battle.

I will keep you informed of any changes in the situation.

Yours sincerely,

[Signature]
Arrival of the U.S. Force During the War of the Rebellion

Infantry. The three bodies first called the force, in the early part of 1861, known as the "three hundred men," were armed with the old Snider

...in the Smollett ordnance of 1822... (carbines 69.) almost to percussion

...the New York regiments from N.Y. when England came to the new Springfield rifle mark of 1836. These were obtained from the State Pensions, provided by the U. States. The infantry of the regular army were all provided with the improved Springfield

The five hundred thousand men were called for by act of Congress in July 1861. The troops twenty-five thousand were provided with the Springfield rifle

Practically these all could be prepared during that year. Both then, and the regular regiments in the central armies were...70 pounds...and the Second Division were distributed to the troops of the Army of the Potomac. The remainder of this force furnished in the spring back round, of which about 125,000 were of inferior

...and the manufacture. The 3rd Florida years of Deacor can

in the at that time in use in the Union. Armies of the U.S.

The SNIDER Carbine differed from both models of the Old Pattern, but they were nearly their bosom aces...in every respect, of the 3rd Florida years of Deacor can

The 3rd Florida years of Deacor can

The SNIDER Carbine differed from both models of the Old Pattern, but they were nearly their bosom aces...in every respect, of the 3rd Florida years of Deacor can

...of fitting them for the service, as was always the rule when they were brought into this service. First, they were fitted by the to the army as Army. Then the order for the Smith carbine came in. As soon as the order was in theory, they were issued to the troops in lieu of the Smith carbine and...
Springfield - Utica A. M. Aug. 10 1861
Belmont - Nov. 7 1861
Ft Henry - Feb. 6 1862
Dover - Apr. 16 1862
Shiloh - Apr. 16 1862
Cem.Mt - May 30 1862
Lex. - June 2 1862
Perryville - Oct. 7 1862

Memphis - Dec 3 1862

Vicksburg - July 4 1863
Nat. plastic - Aug. 8 1863
Chalmette - Sept. 2 1863
In Kent - Nov 24 1863

Yukon - May 18 1862
Independence - Apr. 18 1862 - 7 days
Ball Run - July 21 1861
2 - Aug. 30 1862

Easton - Sept. 17 1862
Fare Oaks - May 31 1862

Fredericksburg - Dec 12 1862
Chancellorsville - May 2 1863
Ernst Oldenburg
July 4, 1604
From which it is clear that a larger third time,

without proof, nor may it be true if 20 inches. The may of

this term to your part, to the same 4lb. being outside of the

whole of discharging. In an action which came in

the number of the Artic. Section of the army of the

before in the form of a demi-trench, which was found

the cannon with eight barrel.

Subject: Shell ball

It is probable that the source has been much shorter.

From the Shell pistol, connector to the all arms which exist.

In the U.S. service that has been seriously employed at all. If

the form of cannon and ammunition, against

been a much shorter barrel. The construction of this

-pressure will be carried by Western to the end. The capsule of

the opposite part filled with powder, embedded in the face of an

after itself acting, elevated around. The burning charge

in the opposite command with the explosive surface at

the face of the barrel by the same force. The explosion in

the quarter of a second after the charge is finally in other

hand at 30,000 from the muzzle of the piece.

It was stated on a great part of the latter, that an

explosive pneumatics bullet has employed by the local Indian

authorities, especially in the eastern rear of the military

Army of Washington. The latter has been

I have now learned, by setting up a pressure of the palpable, out for the Memorial Officers who have been

here. I have known these in the water,

from a bullet that appeared in the body of a man.

The latter is the nature of the palpable, which acting on

the percussion principle, to prevent all a term from could

not learn.

The use of the explosive bullet, is not altogether new. Experiments with in

expansive pressure bullets were made as far back as the year

1823 by General Jacob of the East Indian Service, as a model of an explosive rifle. The carbine carried by those officers

a leaden bullet of the same nature has also been made

by Oceana, a gunsmith of France. It does not appear that better than projectiles have been being

employed by any British or other in the British or French

armies.
Mark Cluver says, "The English people are already threatened - and have been, in fact, for many years. The invention of the French Army — the famous French army, as it is called — has been a great advantage to the English, as it can be loaded and fired without the necessity of reloading it every time."

The English people are already threatened — and have been, in fact, for many years. The invention of the French Army — the famous French army, as it is called — has been a great advantage to the English, as it can be loaded and fired without the necessity of reloading it every time.

The English people are already threatened — and have been, in fact, for many years. The invention of the French Army — the famous French army, as it is called — has been a great advantage to the English, as it can be loaded and fired without the necessity of reloading it every time.
The breach loading, made to the last film, being the rebellion over the canister, & revolting parts of various patterns, toward the front cavalry, I moved the closer of the center carriage. The driver, reporting with fire for infantry, presented the most perfect weapon known. The cartridge, from many forms of lead, cotton, or the canister and hollow metal metallic, and water proof. The detonating powder for the ignition of the charge was found in the form of the cartridge. The use of the percussion cap was found to dispel with and great reduction of fire was obtained.
(91)

1. a head of grape cannon

2. grape shot, iron balls placed one on top of the other, 1/2 turned to position by two iron rods, 1/2 turned at the breech, 1/2 turned at the barrel, 1/2 turned in the field.

3. The line of the shot, 1/2 turned, 1/2 turned at the breech, 1/2 turned in the field.

4. In the 1st stage, the line of the shot, 1/2 turned, 1/2 turned at the breech, 1/2 turned in the field.

5. If the line of the shot, 1/2 turned, 1/2 turned at the breech, 1/2 turned in the field.

6. No line of the shot, 1/2 turned, 1/2 turned at the breech, 1/2 turned in the field.

7. The line of the shot, 1/2 turned, 1/2 turned at the breech, 1/2 turned in the field.

8. No line of the shot, 1/2 turned, 1/2 turned at the breech, 1/2 turned in the field.

9. No line of the shot, 1/2 turned, 1/2 turned at the breech, 1/2 turned in the field.

10. The line of the shot, 1/2 turned, 1/2 turned at the breech, 1/2 turned in the field.

Comment. - The form of projectile is clearly marked to, to effect the finish of an enemy at distance. It consists of a 30 cyclinders on a can, filled with carp. A line of the shot, 1/2 turned at the breech. When this line of the shot 1/2 turned at the breech is 1/2 turned in the field. The effective range of field cannon is from 300 to 800 yards.
The following are the chief varieties of Elaborated Projectiles. Amongst the last...

The Notched Projectile—This is composed of their circular section, fitted in two cavities, cannon body, second the main case or shell, and then an interlacing band of lead with a slit in each. By the explosion of the charge, the sabot is driven forward when the body of the projectile, extending the leader ball, which is thus forced to advance the barrel of the gun.

The Schenck Projectile—This consists of a cast iron cannon body, with a cannon case. Around this base the place is wrapped the expanding portion, a thrust lead of proper mass. By the explosion of the charge, the lead is... forward in the case, so as thus force into the... space of the bore, the projectile emerges from... the muzzle, the lead is blown to pieces.

The Parrott Projectile, is an Elaborated cast-iron ball, upon which a brass ring is cast. The gap from which the lead is discharged, the gas emerges itself into the brass collar, which is made to... take the gash. The James Stagg Projectile, now deemed fallen into disuse...

The Elaborated iron ball, will... a... of... and... expose it to... the groove... the barrel, was placed a backing... sheet... and... which was expanded... at the moment of discharge... the action of the gas from the barrel to the bore of the... projectile...

Other Projectiles Variations...
The writer, being sound of heart, adhered closely to the principles of the project, and the defects of it that were pointed out by the writer were carefully considered and corrected. The project was not to be a mere showpiece, but a practical one. In the plan of the project, the writer has been able to introduce new features and improvements. The writer believes that the project will be a success and will be of great benefit to the country.
That although the so-called with wounds are rarely that death, since contiguous from mechanical or electric shock, wound that a shell are sufficiently present by the tissue shown of such accidents.

...for a description of the non-lethal officer, a shell exploding far away from the position, at a critical moment in the action, was fired by a grape ball wound that which wounded the ball many yards in front of him, the shell directly wound him. Having failed to fire his own expansion, and not to kill the wound of his body, at the moment of impact, the ball lying loosely thereon, the head of the ball was in nearly an horizontal position. The head of the ball, like a bullet, was driven into the body and visible to the eye. The shocking of the repair, the second

Difficult to apply, or to come war letter, although not different to the Hope Col. C. to leave the field where the seaman CONTENTMENT of the ship's first had served. On examination, several hours after the beginning of the shot, similar effects were found including the considerable disturbance of the surface. A large mass of the body fell over, with the bullet shot, in a large depth, a large depth. When the patient be rescued without further injury, against a channel of the wounds, of which the nature of the shell was obtained by the author. During the United States the Pelew Island battle of 1864, we observed in the vessel an amount of such extent, care to prevent swerving, glancing from the head of the horn, being fixed and containing at the same time the field of the rider, an officer of cavalry, a staff officer, but in the case of the occupant, the coccyx of the coccyx.

Now continues are also the result of a fragment of a shell, and justice in point. It may be mentioned, the care examined by the author, in which a 12 pound shell exploded close to an artilleryman, producing a serious contusion of the base muscles of the clavicle, and partially

The portion of its end...
The decision of the council of the town of New Haven, Connecticut, for the year 1767.

The town of New Haven, Connecticut, for the year 1767.

The town of New Haven, Connecticut, for the year 1767.
The cannon's concussion, one quite comparable. The council of metallic hits, which tear into the bowels of the projectile. These hits contain detaching powders, which is precisely exploded by the action of metallic rods called a shrapnel upon the impact of the projectile and a steep distance. To consider all accurately, it shall be

The use of projectiles, formerly in the age of the chariot, the bill batter was replaced with a cannon. Many of these first shells exploded as the first time. The new batter, however, is known to have a better accuracy of fire. The force of the recoil, however, seems to be the key element in its performance. The batter that, when thrown when the field; when are the batter has rolled away...

May as they are a part of the shell, these metallic lumps expand, they shatter the wound, so it is begun a fragment called when to shatter them from the body.

Grenade

The hand grenade is a device of hell, of small size, intended to be thrown by hand, by the deflection of a quick-acting

The cannon fire for these metallic rods, and its impact with the explosion of the projectile. The use of these metal rods has been limited during the assault, upon a rebel fortification. Forming these metal rods possessed in the immediate time, which are inserted at the moment. The grenade, planted upon motion been thrown. The hand grenade which has the advantage of the U.S. Army is corresponded to this, arranged as it is. When thrown, except a hand disturbance...

The use of this grenade, during the civil war, has been limited. The assault—while the rebel fortifications at Fort McHenry in the Maryland—were attacked were made by the U.S. Army. The armed themselves, and using the rifled muzzle, which are thrown on the rampart among the disabled of the North. Fort four hours of these grenade, exploded many of them caught upon blackett of the rebels. When in these engaged against their assailants...

The wounds produced by these grenades are usually in very exterior to those wounds from the hand shells. Occasionally among those grenade, when engaged in an assault, the metal fragments enter with shell's...
Theory of Line.- In elevating the flight of a projectile the laws following
must be borne in mind.

1. The line of flight, which is the ordinate of the parabola, passing through
the highest point, or height of the breach or muzzle of the
piece, and directed up on the object fired at.
2. The line of fire, is the prolongation of the axis of
the piece, in the direction of the muzzle.

3. The trajectory, which is the curve described by
the centre of the projectile.

The velocity of a projectile is the velocity with which the piece is instantly
removed from the gun in a straight line towards the object. The velocity of
an object is the distance of it from the point of origin, or the distance
travelled by it in the time it takes to travel that distance.

The velocity of a bullet is the rate at which it moves, and is measured in
feet per second. The velocity of a bullet varies depending on its weight
and the force with which it is fired. The velocity of a bullet is important
in determining its range and accuracy.

The trajectory of a projectile is the path it follows through the air. The
trajectory is affected by the wind and the resistance of the atmosphere.

The range of a projectile is the distance it travels before it hits the ground.
The range of a projectile is affected by its velocity, the angle at which it is
fired, and the wind.

The angle of elevation is the angle at which a projectile is fired. The angle
of elevation affects the range and trajectory of a projectile.

The projectile must be fired at an optimal angle of elevation to achieve
maximum range and accuracy.

In summary, the laws of projectile motion are influenced by the
velocity, angle of elevation, and the effects of wind and resistance.

(End of reference)

Referring to the principles of projectile motion, the velocity of a
bullet is directly related to the kinetic energy of the
projectile. The velocity of a bullet is a function of the mass of the bullet
and the energy imparted to it by the gun.

The trajectory of a bullet is determined by the forces acting on it
in flight, including gravity, wind, and the resistance of the atmosphere.

The range of a bullet is the distance it travels before it hits the
ground. The range of a bullet is affected by its velocity, the angle at which
it is fired, and the wind.

The angle of elevation is the angle at which a
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In summary, the laws of projectile motion are influenced by the
velocity, angle of elevation, and the effects of wind and resistance.

(End of reference)
A ball when discharged experiences two forces or movements, one being the force of projection, and the other, the force of restitution, upon its arrival at the zero of its motion. The force of restitution, after the arrival of the ball at the zero of its motion, is that which returns it to the earth, and is equal to the force of projection. When the ball leaves the muzzle, it travels with the same velocity as the bullet, except that it is not accompanied by the force of discarding the charge of the gun. The velocity of the ball is governed by the length of the barrel and the charge of powder. The velocity of the bullet is governed by the weight of the bullet and the charge of powder.
Q. What effect does the increased weight of the elongated nose ball have on its trajectory when compared to the usual hollow bullet? It is observed that although the initial velocity of the former is less than that of the latter, after a short flight, it again approaches the muzzle of the piece, the elongated bullet losing weight more rapidly than the ordinary one. The elongation of the bullet contributes to its aerodynamic shape, allowing it to experience less air resistance. This effect is more pronounced with higher velocities, as the bullet reaches a point of equilibrium where its terminal velocity is reached.

P. The relations of the elongated bullet to its trajectory is a matter of much interest. The trajectory of a bullet is determined by the combination of initial velocity, angle of elevation, and air resistance. The elongated bullet, due to its aerodynamic shape, experiences less drag, allowing it to maintain a more consistent trajectory over longer distances.

The elongation of the bullet can be expressed as a ratio of its length to diameter. This ratio affects the bullet's aerodynamic properties, such as its ability to remain stable in flight. The elongation also influences the bullet's energy transfer upon impact, which is crucial for its effectiveness in various applications.

Hence, it often happens that irregularities exist in the gun, the projectile, or the manner of loading, which may alter the quantity or quality of the charge. The gunpowder charge is critical to the elongated bullet's performance. The force of the charge ensures the projectile's velocity, while the elongation helps maintain its aerodynamic integrity, reducing the impact of air resistance.

In conclusion, the elongated bullet's trajectory is a complex interplay of factors, including initial velocity, angle of elevation, air resistance, and the gun's design. Understanding these factors is essential for optimizing the bullet's performance in various applications.
property of a projectile. The projectile travels in a parabolic path, and its flight depends on its initial velocity and the angle of elevation.

The term "parabola" comes from the Latin word for "to fall," referring to the parabolic path of a projectile. The vertex of the parabola represents the highest point reached by the projectile during its flight.

The trajectory of a projectile is determined by the initial velocity, angle of elevation, and the force of gravity. The path of a projectile can be modeled using the equations of motion, which take into account the acceleration due to gravity and the initial conditions.

If the angle of elevation is too high or too low, the projectile will not reach its maximum height. The optimal angle for maximum range depends on the initial velocity.

In summary, the motion of a projectile is governed by the laws of physics, specifically the principles of classical mechanics. The path of a projectile is a parabolic curve, and its motion is influenced by factors such as gravity, air resistance, and initial velocity.
and rotation upon its axis imparted to it by the rifle of the piece during the first part of its flight, gradually passing into a conical motion, similar to that described as occurring in the lift about to come to rest.

Conclusion

It is important for the military surgeon to bear these facts in mind in examining wounds produced in battle by the Elevated Rifle projector. The varying character of the wound produced, especially the wounds of entrance, can often times, rely be fully understood upon careful study of the nature of the projectiles themselves, and of the disturbing forces which influence their flight.
Affirmation of Value of Injuries

Small
Arm protractors

Round

Elongated:

In market rifted 700-800 yds.

Carbine — 400

Proportions in miles

Distance

200 yds. Every part of a man; every limb, every injury,

500 — the face — but head, legs, arms, movement

600 — the head and the lower part of body can be made out —

700-800: the body of elongated

800 — feet — but chest

1100-1200 — no feet, but marked.

Cannon shot — Round — to 500 extreme range — Precise

Elongated — to a great distance, but not by direct — hell

Carbine — 700-500 — not used

Shell — left accurate shot, showed shot —

Demoralizing — idea of profusion.
Arrival of the US forces, during the War of the Rebellion

Nearly all the Infantry first called into service in the early part of 1861, known as the "Three months men," were armed with the old smooth bore muskets of the pattern of 1822 (carbine, etc.) altered to percussion locks, or else with the smooth bore percussion musket of 1842.

A few Regular Regiments from N. Y. and New England carried the new Springfield musket of 1855. These were obtained from the Durfee foundries, and to the respective States by the U.S. The Infantry of the regular army were all provided with the improved Springfield flintlock arm.

The 50,000 Levy were called for by Act of Congress in July 1861. To these troops, 25,000 Springfield flintlock muskets, all that could be prepared during the year, were issued. With these the few Regular troops and the Western Armies were equipped. The rest were distributed to the troops of the Army of the Potomac.

The manufacture of the Levy were furnished with smooth bore arms, of which 125,000 were of inferior finished manufacture. (These arms to U. S. States, etc.)

Turning the latter part of the year 1861, the Government arms were barely deployed in training these smooth bore arms in stone. As fast as they could be done, they were issued to the troops in lieu of the smooth guns then in their hands. The muskets thus altered, were of the old pattern of 1822 or 1842, but when "rifled," they were found to be
Using & serviceable weapons. The
Chief objection to them was their large calibre,
69mm. The shot, demanding a ball of such weight as
rendered it difficult for the foot soldier to carry a
sufficient amount of ammunition. These
altered muskets were subsequently called in
and their place was supplied by the regulation
howitzers & light muskets, calibre .58. In 1863
many of the Enfield 117.5 field rifles were still in use with
a calibre of .55, an elongated bore of .53
suitable for a full rifle musket to the service
was adopted by the Ordnance Dept. The
altered
117.5 calibre was still further reduced toward
the close of the War.

Fine-fighting. During the war a few regiments
Long Range rifles intended to act at sharp-shooters, were
conceived with fine-fighting heavy target rifles
of long Range. From these marksmen much
more expected, but it is questionable, despite
the newspaper correspondence, whether they
at any time inflicted serious loss upon the
enemy, or realized the anticipation which
had been formed as to their accuracy of
fire.

Arms of the
Cavalry Service. At the commencement of the War our mounted
troops were armed with Sabres, Colt revolvers,
points of long size. In addition they
were infrequently furnished with breech-loading
Carrinets of Sharps, Spencer's & other patterns, as fast as they could be procured. At a later period in the war, and after the Organization of the Cavalry bureau, the issue of arms and modified, and it was ordered that each cavalry man should be armed with a saber and only one fire-arm—if either the revolving pistol or

The forms of the latter were most esteemed were the Spencer & Henry repeating rifles. Cartridges for which metal cases and proof cartridges were used. The Skillful Employment of such admirable long range weapon would far to contribute to the efficiency of the Cavalry, which enabled this arm of service for the first time in Military History, to the extreme north of the attack of an Enemy's Infantry.

At the outbreak of the war, the U.S. field Artillery was composed entirely of Smooth Bore guns. Rifled pieces had not been introduced, but very few blanks were in the country, as they were in the hand of Experimenters, and a few companies of Militia Artillery. The absence of a rifled field artillery was regarded as a great deficiency. To remedy which vigorous measures were at once adopted. Rifled Cannons became the Nap.

Before many months, the Smooth bore guns were discarded, and in their place the
new forces were substituted —

But the experience of the two bloody actions showed that the reform in this respect had been too sweeping —

Valuable as the rifled pieces might be, the smooth gun was in its proper place at least to.

The composition of the artillery was accordingly altered; a proper proportion of smooth and rifled arms was

redistributed —

as the end of the war

the field artillery was now constituted in composed of the smooth 12-pounder, and the three-inch rifled gun. The 6-far of the Parrott, and the pattern of the Ordnance bureau. The eight 10, 20, 30 cm. at one time in Vogue were

withdrawn from active field service —

It is unnecessary here to speak of siege guns, and heavy guns mounted on forts or defensive works. They were of every calibre from the 6-inch to the 10, 12 inch, and the

monster Swamp Angel, having a barrel of several hundred pounds in weight 

Southern (Rebel) Troop — Armory of

It is difficult, of course, to speak with accuracy on this subject. It would appear, however, that the

Southern troops were fairly armed in the earlier campaign of the war. At this time little or no good

management upon the part of the Southern leaders, only treachery toward the U.S. Government
The U.S. arsenals in the secessionary states were heavily armed with good government arms. The only exception of those stored in the St. Louis arsenal fell into Confederate hands. Large numbers of improved arms and much ammunition of European manufacture, were also bought over by the blockade-running vessels, and in the East, much material of war was captured and brought by the Insurgents.

The Southern Confederate arms, in the West were unquestionably well supplied with arms, and ammunition as early as October 1861. The Enfield rifle at that time had been obtained in large quantities.

Very many of these troops were also armed with the western or Mississippi rifles, a firearm weapon and one which in expert hands carried havoc into the ranks of the opponents.

At a later period, as the industrial resources of the South developed, further manufacturing arsenals were instituted. In some of these, as for example the Pedegon works, which contained the gun machinery formerly in the U.S. Arsenal at Harper's Ferry, admirable and serviceable arms were turned out.

Projectiles. The small arms projectiles used by the Confederate Infantry were many lighter.
I have obtained from the different battles -
field specimens of the most prominent
branches of the English continent's artillery.
At the commencement of the War, cavalry
was a favorite branch of the service with
the Confederates. The men owning their
own horses were well mounted. Their arms
were the saber, revolver, and rifle
in frequent use especially in the west. Each
mounted man carried also a double
barrel, burning piece.

Defensive
No defensive armor was ever authorized
by the Government. But early in the war attempts were made by a
New England Company to manufacture
a cuirass of soft steel, whose power of
resisting bullets was greatly vaunted.
One of these I obtained at Gettysburg, and it
is now in the A.M. museum at Urbana,
-It was taken from the body of a fallen
officer, it is pierced through although it
was placed-
Menstrue accompanying Ball Wound.

In case of a soldier broken in action by a ball,

Pain, may be unnoticed - or felt by friends or comrades - or chance

bleed or clothing. Often, they are so slight that they go unnoticed.

May be noticed - or felt by friends or comrades - or chance

In such a case, it may be that ball struck a ligament or sinew, or nerve.

In such a case, it may be that ball struck a ligament or sinew, or nerve.

Appreciation of injury influenced by alliance, present, or

Successful action, or generally favorable circumstances

In reverse case, the appreciation is uncalled for. In defeat

Retreat, depending circumstances, or where the soldier

lacks confidence.

Pain, may come on a little later, say two or three

hours after injury; or is dependent upon pressure

or strain. Or strain is produced by Enlargation, Straining,

The Seat

Can often at a glance be detected, or examined at least by the

Action or Attitude of those shot.

Thus in general way, in wounds of the

Lower Extremity, the man will fall forward or stumble, with an endeavor to place the

force of his fall on his hands.

Upper Extremity - if in action, will fall to side

Head - most frequently pitched forward, or springs, more or less stunned.

Here, in addition to tingling and electric sensations, there

are often a sense of involuntary movements, the man turning

tarsally, or exactly, around.
In wounds of the chest, the action is often indicative of great anxiety
produced by the sensation of strangling, and also by
the moral effect of the injury which he regards instinctively as
so great.

In the belly, the usually great shock & collapse from compression produced
upon great sympathetic centers. The struck man sinks
down helplessly, and almost immediately shortness of
breath.

In wounds of the organs, especially of the stomach, are accompanied
by nausea, great demoralization, occasionally intense pain.
The patient suffers in the groin, doubling himself up.

In wounds of nerves, or where the nerve trunk,
are affected by commotion, there is an immediate
loss or impairment of sensation & motion to a greater
or lesser degree. Occasionally there is very sharp

Pain about the face is absent.

referred pain. Sometimes referred to periphery, as in injury of

nerve of face, where pain felt at arm & elbow.

referred to other limb. Sometimes referred to other limbs (Mitchell)

referred pain.
In these often but little pain comparatively, in consequence of the shock, general or local which accompanies so large an injury. Illustrate by Shell wound of Jack Belmant.

Greatly affect the Soldier's behavior when wounded. Pint (native born), as a rule regards his wound practically.

It is an evil, an accident, but he will make the best of it. He will if not desperately hurt, get himself off the field to recover as best he can, as soon as he can. His ingenuity soon converts a gunstock or a forked stick into an improvised crutch.

Is variable in his demeanor! - Sometimes gay and light-hearted, sometimes solemn in his demeanor.

[Drunken Irishman from Alabama, drunk, pipe in mouth, with arm amputated just above elbow. Not authorized.]

Iscephatic - When wounded, he has puzzled the part of the contract, now the Government must do theirs, and care for him.

Of all whom I have seen, the Negro when wounded in the most patient, child-like, trustful to his medical attendant - Obedient to his commands, think of Negro retaining his arms - The White taken troubled, throwing them away as a rule.
Individuality of man exists in its influence. I do not think that even

Gravely woundedЗ dead death so much as is actually supposed.

How can I live, once said a dying officer in the other room.

The dying dying so unconcerned? In the face of death? The line?

I think it a lie. I answered:

"I know very well. I thought

he like to have been larger. But duty, set by father that

I have so behoved me at the head of the men.

Dr. Philip Sydney at St. Sephens.

The influence of Black Castle, a I may, seems to me

to be slight in making men to face perils, and

to rear up against I read the disagreeing effects of

injury executed at the head of duty.

It springs to the instinct of self-preservation, that

many a man cannot be a coward in battle,
especially in his first engagement, if it were not

that he was afraid to be—if he did not fear

to encounter the reproach of contempt of life

from comrades, and friends at home.

The idea conceived in the beautiful speech

that:—"We Singaporeans cannot afford to be

cowards," is not confined to a single family

alone, illustrious as that may be

I have often seen men, having to bear

patiently various sufferings, heightened by

privation, in the hope that by their example

the suffering trials of others become sufferings

of the gallant.

Influence might be exerted upon the suffering

spirits of their left behind comrades.

Religious Sentiments.

I need not dwell upon the resignation

extended to the sufferings by the powerful effect of

religious contemplation.
Exaltation of a strange nature is often born in those about to die. "The soul of liberty, if ever formed within my breast, once said to me, an officer; where characters and reputation were not involved, and when around 2000 had been received under the most creditable circum-
stances, -

Excitement or the accompanying sound, but generally I think those of excitement or excitement least nature. [Illustrate by yelling, shouting, and rushing.] This is a singular effect of J.S. Warden.

Logically to it seems itself sometimes by Logically,

Sometimes by an apparent affection for Single,

a sort of desire to be severe, and to have a favorable impression.

This is so common as not to require illustration -

Temporary [Illustrate by those, as shown up in a long -

Red Resemblance. Sometimes by these, as shown up in a long -

Navy Fana. Sometimes, [Illustrate by yelling, shouting -

Course. Sometimes. [Illustrate by Key at Alexandria -

Here a man shot is not responsible, it should not be fairly judged for his course, as a well known fact to call in Military Surgeons. [Illustrate by the care of such as Alexandria] Without doubt. 7 made a headstrong sign of protest before - of an entire conveyance.
Shock. The most frequent symptom of injury — the Electric Shock — and even before the military surgeon, his first duty must be to attend to Shock, involving as it does the study of the action of the nervous system in all its subdivisions.

I do not propose to fully discuss these theories in detail, but rather to regard Shock from a practical point of view, as witnessed early after the reception of injuries.

Definitional of Shock. We all know what Shock, surgically speaking, is — that it is a deprived condition of all the animal functions resulting from certain impressions made upon the nervous system, either upon its central organs, or upon its peripheral distribution.

The Causes of Shock. They may be conveniently classified as follows:

1. Through act upon the corporal organization alone
2. " " " " psychic alone
3. " " " " corporal and psychic in equal or unequal
4. Cold

As regards the 1st category, may be mentioned internal hemorrhage, as from the rupture of the internal aneurism.

The 2nd. The Psychical Causes are familiar to all — fear, anger, etc.

To the 3rd Class (both corporal & psychic), belong Gunshot

Injuries.

The Psychical element in these third class, as far as
Mental Strain

Far as gunshot injuries are concerned, it constituted by the Mental Brain, and apprehension, which a condition of nervous tension which under the body is experienced by all, even the most veteran soldiers, who went to engage an enemy. They feeling may be one of anxiety or the result of the action; or it may be a feeling of fear or personal apprehension. In each case, it is an abnormal mental condition of strain, naturally followed by depression, and if exposure which will be all the more aggravated the soldier become a wounded should be cared for speedily in the evacuation.

It will thus be evident that in medical practice, the degree of shock must be determined by the nature of the injury; the brain's mental condition, and also the surrounding circumstances, or exposure to cold, or other factors.

From a clinical point of view, I have been in the habit of my own mind of dividing cases of shock into the great classes.

1. Shock unaccompanied by concussion of the brain - cerebral disturbance.
2. Shock accompanied by cerebral disturbance.

And each of these great classes may be modified in its turn by the presence or absence of loss of blood.
Let us for a few moments glance at these clausus in detail and first of

unaccompanied by Coma, and Dr. Brain.

This form of shock occurs most frequently in injuries of the extremities and of parts remote from the great sensory centres.

As an illustration, let us take the case of a general fracture of the hip joint, a picture of this injury is briefly before me — At a late the accident is usually accident attended by deep shock —

We will suppose in really happened, that

The man is in shock, he is in shock, he is in shock.

In such a case of Coma, and the man upon his bed, partially, varying as

The voice is feeble, consisting either of faint motions of the lips than of articulate articulate sounds; but the effort to speak is there.

The color of the body is White, the face is whitely pallid — The lips are closed, and from the absence of blood, appear thinned —

The fingers are White, and their pulses are around the bone ends, a condition which has been

To Cauterize, known Empreassy, dependent on a release of the arterial capillaries.
Temperature. The temperature of the body is low. The skin feels cold to the touch, and the patient complains of cold.

Face. At times the face is absolutely chalky and expressionless. At other times, its expression is one of intense anxiety and fear. With this latter condition, there is often the clammy sweat, and the forehead is beaded with moisture.

Eyes. The eyes are fixed, staring upwards, and a glary stare - most generally white. Occasionally, the eyes are lightly covered by the upper lid, which is often obscured. The pulse is feeble, sometimes nearly to the point - it is often slow, and a faint quivering indicates the reaction approaches. It is often too irregular and intermittent.

Respiration. It is feeble, irregular, and jerky.

Even the chills, the man may hardly react. Of the common symptoms, the man is in the third stage of shock; the coldness and pallor increasing; the pulse and respiration gradually becoming weaker and weaker, and eventually ceasing.

But even in these cases of death, from extreme shock, I have sometimes seen consciousness retained until comparatively late period - especially when the shock has been the result of burns or injury, affecting to a great degree the peripheral nerves.

[Signature]

[Date]
The form of Shock which I have described is exceedingly common in military practice—

I have observed it after comminuted fractures of the large joints by elongated projectiles; and

the gunshot of the hands from large muskets.

I have also seen it accompany the Obliteration of the entire limb from the Stroke of a

Cannon-Shot.

It is often met with in Burns and

Exposure; and I am sure that every Hospital

Surgeon present can recall to mind instances of

Death resulting in a state of Shock following

Burn, in which with the Central Committee

then present, the Mind remaining clear to

almost the last moment of life.

Shock, accompanied by Commotion of the Brain.

This variety of shock is most frequently met

with in injuries proper to the head. It is also

observed in those cases in which the patient

at the moment of the reception of an injury

of an Extremity, has at the same time suffered

from concussion of the Brain or Spine, from

falling or from being打击 violently from

the ground.

In such cases, the evidence of Shock as already

described may be present, with the additional
phenomena dependent upon impairment of intelligence and loss of consciousness.

Hemorrhage (I have thus far spoken of shock produced by the element of shock, traumatic nervous impression, uncomplicated by great loss of blood; for such instances of shock I have repeatedly seen.

But as will be readily understood, hemorrhage exercises a most important influence upon the result of wounds received in battle, deepening as it does the shock, and so often giving rise to a fatal syncope.

How hemorrhage acts. The loss of blood acts: whether

primarily upon the heart, by the withdrawal of its accustomed stimulus;
or primarily upon the lungs, thus interfering with blood circulation;
or primarily upon the brain-brain-nervous system, then

rendering the carbonic action, one of the matters for discussion.

But let the explanation of the dynamic of hemorrhage be what it may, the results of lost life are constant and readily recognized by the surgeon.
There is one set of symptoms usually
described to hemorrhage, to which perhaps
I should attach I refer to the presence
of convulsive movements and restless,
and delirium, in those instances, where the
loss of blood has been excessive or prolonged.
These phenomena are usually regarded
as the precursors of death.
My own observations in this matter are
purely of a negative character.
I have frequently seen strong men in
full health die, both from external and
internal bleeding. Where the death
has been sudden, as from rapid and
tolerant hemorrhage, I have witnessed no
convulsion. I have seen men a
shell even of the cardiac almost
instantaneously fatal. I also have
seen death follow a large laceration of a
large vessel in the pelvis, probably the
external or primitive iliac. In neither
of these cases was convulsion present.
But where the bleeding has been gradual
and prolonged, or recurring at short
intervals, I have witnessed restless and
jactitation developed to a degree which
was almost convulsive in its nature.

[Relate here can not before Petersen]
I have no fear but merely referred to shock dependent upon mental causes, but the existence of such shock is well known to all. One man is more impecable than another and will suffer more depressions from a comparatively slight cause, than will another from a grave injury.

Thus I remember to have been a young man of not more than 20 years of age, who had been brought off the field with a slight perforating flesh wound of the right thigh. He was in a state of mental depression which absolutely amounted to shock, and influenced the pulse, his temperature, and his expression of face.

His fears for himself were excessive, his state of mind was terrible. Beside him lay a new fellow with a gashed wound of the upper 3/4 of his thigh, the ball having penetrated the pelvis and inflicted a fatal wound. He was tried instantly, have been.

Thus the two had been wounded at the same time, had been exposed to the same kind of shock. I had equally well cared for one, had had the same care for the other. That the shock of the former was only mental.
Mental loss was insufficiently proven by the fact
that a few soothing assurances and a little
Honorata dispelled his fears, brought color to his
lips, and a smile to his count-

I am sure that every surgeon has seen
many such cases of nervous instability
occurring in persons in whom it would be
least suspected.

Sometimes the instability is a natural
predispotion constituting the nervous
enfeebled—so-called. At other
perhaps be accounted in the result
of Nervousness, Exposure, contusi-
Malaria, or the depressing effect
of the cancer and the fear.

But when it does exist it does influence upon the occurrence and
degree of shock is indubitable, and I refer
frequently a striking example of the
influence of the mind upon the
body.

It will thus be seen that shock is
of a compound nature, and due to complex
causes.

Practically we meet with it in the
field these causes, an onco combined discomfor,
so that it is difficult to recognize in all
either to refurnish them
Fortunately the method of overcoming it
Primary Hemorrhage

- General idea of "Vestigial"
- Different opinion among surgeons as to frequency of primary H.
- None other than proportion of hemorrhage to wounds as 1:100.

Reddened & Light

Edema of the tissues of the wound

Massive Hemorrhage

200 French estimates around 20 of vessels - 200 American round 8.

Nedsof, knew of no ligations primarily.

To quote 95/100 th of Battle field death, 9 from Wounds.

Army of Philomia from National to James 13 103 wounded, 27 killed.

Artilleryman at Fort Donelson

Shells

Small and

Projectiles

Fragments may cut vessel also.

Vessel may be cut through by shot that penetrates & grinds action of long shot. Bullet - high velocity, its direct course - that of a large vessel be cut.
Of a large vessel be cut

arterial walls during

1. The patient faints, during the syphon effect or

in the vessel, if the hemorrhage is arrested spontaneously

surgically requires.

2. The patient dies almost instantly from

the excision of blood

So long

The surgeon has little to do until primary great bleeding,

although undoubtedly, this occurs to a partial extent

frequently.

Quoted: My own observations of dead men Surveys

Nature of arterial hemorrhage—coming out of deep wound—not always patent

Hemorrhage. I am inclined to believe a more common than

suggested—spouting from black clot on bullet,

Amateur of wounds

often clinical hemostasis—probably on this

in artificial condition but little bleeding.

Often too, I have seen a strip torn out of the

vessel—so that bleeding must be inevitable.

Bleeding during early transportation, colored as primary hemorrhage

incorrectly

Through the matter of hemorrhage in medical

death of injury of Waukegan in most cases

especially of Seaboard—

Relate story of Gettysburg—Wisconsin Soldier
All matters of health and health are influenced by the nature of mobile blood and blood flow. When combined with injury, death from abrasion or body usually occurs upon one side, the head inclines to one arm, the limbs and lower part of body flexed.

When hemorrhage has been great, the body is weak while the face may pallor, but not bile. The lips, teeth,

Death from abrasion

Body mostly upon back, the face flying up.

Death from the discharge of a Cavan

Death, when

When the projectile is at full flight, the body is struck violently, a considerable distance. Thus a man shot may be thrown 15 or 20 feet.

Death fromänded or wounds of lung, breaking the parasteme or neck.

Respiration

The body frequently rests prone upon its face belly, the arms extended, the hands clenched, grasping the linen, or body, a dirt.

Death from

The body has usually suction or hovering forward.

Head wound
Instantaneous & occasional is the term used to describe the death occurring instantly and directly in the absence of any injury. Especially, if the head, the position assumed by the body are indicative— the attitude preserved being those of the last moment of life—

Thus, I have seen the

Body of a soldier, sitting unsupported on the knees, grasping the barrel of a gun, the stock of which had dropped to the ground—

At Williamsburg, I saw another soldier of middle age, one of whose feet rested on the ground— and one knee against the bank of the road— the right hand stretched forward against the low breastwork of stone blocks in front of him— for he had been killed instantly when rising to his feet, and leaning forwards in defending the stone redoubt, now by the famous field of corn—

Both of these men, had been shot through the head.

W. Reed

Late Surgeon, U.S. Wounded at the Battle of Bull Run a boy of 17, a U.S. soldier, who had been shot through the head— his right arm was raised, and his hand still held the cap, with which he had been cheering on his comrades, at the last moment of life— a peaceful smile was on his face—

Williamson

The same Surgeon, at Williamsburg, who observed the dead body of a Ticonderoga, who had been shot directly through the forehead, or was chiefs...
over a low fence. This leg was the last attitude of life — the leg half over the fence, the trunk crouched backward as it were. The forearm hand was raised to the level of the forehead, at which its palmar surface turned forward, as if to ward off a coming blow.

I have frequently seen dead bodies of men who had fallen with their muscles in group, pointing forward, it carried on in an arch backward. I have more than once seen a body with knees under circumstances when I had not time to examine into particular.
Dr. Brinton

Present
University of Pennsylvania,
Philadelphia, November 22, 1869

My Dear Sir,

I am sorry to say that the incident of instantaneous death to which I alluded, cannot be substantiated by any evidence except my own recollection. As nearly as I can recall the story, it was that my brother Henry observed a stagecoach on the road between Nashville and Chattanooga, die from the effects of a gun shot wound between the eyes, and become rigid within five minutes afterwards. He was shot while putting on the brakes, and after death, the
arms retained their position. The pipe which he had been smoking remained clasped between his teeth. My brother at the time was sitting beside him on top of the car, and the shot was fired from the wood through which the train was passing.

Yours respectfully,

Louis J. Stille.

To John H. Brinton
While a detail of Union soldiers were foraging in the vicinity of Edleboro, N.C., they suddenly came upon a squad of rebel cavalry dismounted. The rebels immediately took up their horses, and the soldiers fired. One of the rebels fell, apparently without effect as they all rode away, with one exception. He was standing with one foot on the stirrup, one hand on the saddle, his right hand grasping the bridle rein, and his left hand grasping his carbine near the muzzle. The butt rested on the ground. With his head turned over his right shoulder, apparently watching the approach of his enemies. Some of them rode forward to give him the benefit of a second volley. One of the men was wounded in the distance of two hundred (200) yards. The others were killed by the order of the officer in command to bring the enemy to a "truly" a charge. They advanced to take him alive. In the mean time the rebel had been called upon to surrender several times, to which he made no response. Upon a second approach and examination, the soldier was found to be dead in death of his singular condition or attitude, as above described. The utmost difficulty was had in endeavoring to wrench his hands loose from the mane of his horse, and the carbine from his right hand. He was laid upon the ground. The limbs retained the same position, the same inflexibility. He had been struck by two balls each from a Springfield rifle. One entering the right temple with no apparent exit, the other entering the body on the right side of the spine, coming out as it was supposed at the time near the region of the heart, inflicting the fatal shot. The horse had remained quiet all the time apparently. It was put out by a blunder. There was no medical man present that I am aware of. I can only give you the facts as I saw them, understood them at the time.

J. H. Burtnett.

This took place in the spring of 1865. The Union soldiers were a detachment of Sherman's Army. The "rebels" belonged to the rebel General Wade Hampton's command as citizens informed me.
Read Tremain, who had been shot directly over the first head, as he was elevating into a low place. The left remained in the last attitude of life, the leg half on the face. At the instant it moved backward and turned. The head was raised to the level of the face, as it turned a figure forward as if to ward off a coming evil.

I have frequently been more partial to the man who had fallen with them. He was to me great, as a piece. I have come than the man I carried as I as little, in Korea, where I had not time to examine the man.

Large notes

The position, as presented at, concerned to the
attitude of Battle home at Anahim Taved
Hand, as in the case absolutely Dr. Reed, as I would off a blow - in the case that of the Major's having killed at the same moment as his horse the boy acted a thrust into the chest, the lunge passed through the body, and the present of the charging Carabouman.

In the majority of cases, the report of the gun and the sound of the shot, were given by myself and others the sounds were in the head crystal. Strictly speaking in the forehead I suppose the lunge passed the brain or nervous system.

The blow struck him of the heart, and one of the head. The body of the other was repeated.

Belmont.

Mr. Mitchell was

I have known of this injury, as the result of such a wound. Which must from their nature have been uncertain or fatal. I should believe that I have known in the case of a wound to accompany death. Coming from a lung injury of the result of the wound.
Laked the manner a foxel barm, a fox of Moc-12.

In attempting to lift it the body seems hodg to its body. The body is partly uncovered. "I wonder if the body is covered to some extent?"

The same phenomenon have occasionally been observed in boats from Ashley, one of the most feverous of them! A light reflected by the light's bow in the water, which is a light, is filtering through the bottom of the body. 1.333

[Quote: Carpenter 1.333]

At Edinburg June 1885.

The body of Mrs. Reel 1855. Found dead in a sitting position in front of her bed, having her head erect.

Mrs. Reel 1855.

In the case of Mrs. Reel 1855, the left arm was extended, and the right arm was folded. The left arm was folded, and the right arm was extended.

In a similar case, the dematrical portion of the body was regarded as being "more visible," followed by the same color. Reel 1855.

The case of Mrs. Reel 1855 seems to point to the fact that the body was moved, and then forced to the body into the water, then covered after death, that during life...

What is...? An interesting question. Difficult to answer...

I do not probability of the nature of cadaver...
Physiology regards rigor as simply a contraction of the muscular character, which ceases after a few hours, and is then succeeded by a state of flexibility, after which the muscular rigor reappears.

Within the hour the rigor had passed to one of the most intense at the time, but no sign of the battle field to demand all care for the living than the dead.

But from a careful consideration, all that I have been doing in the matter, I am inclined to believe that it will all of them carry this up.

The rigor, bundle, function, in a manner, I will:

1. That the cadaverous attitude exhibited are those of the last moment of the life.
2. That death, has been instantaneous or accompanied by
3. Convulsion, or agony.
4. That it is, if from nothing than an unusually

Improvised

Matte in act, followed by

Oxygen, Pennant, calm.
Arizona, with not less truth or less of dead
human form. Even when frightend they
vent avoil them—despite
Quasi-Thomas-Campbell, I do not warn you
when the Wizard-body but Eig to Eleno
Cameron, as the coming-Calvary
Temporal,
And their half-seen bosoms, are tired to the Plains.

I note my own observation at Belmont,
Hartford Experience
County Map & Brigade a December.