Jefferson Medical College Lecture Notes

John Hill Brinton

Follow this and additional works at: https://jdc.jefferson.edu/medicalnotebooks

Part of the History of Science, Technology, and Medicine Commons

Let us know how access to this document benefits you

Brinton, John Hill, "Jefferson Medical College Lecture Notes" (1865). Medical Student and Faculty Lecture Notes. 36.
https://jdc.jefferson.edu/medicalnotebooks/36

This Article is brought to you for free and open access by the Jefferson Digital Commons. The Jefferson Digital Commons is a service of Thomas Jefferson University's Center for Teaching and Learning (CTL). The Commons is a showcase for Jefferson books and journals, peer-reviewed scholarly publications, unique historical collections from the University archives, and teaching tools. The Jefferson Digital Commons allows researchers and interested readers anywhere in the world to learn about and keep up to date with Jefferson scholarship. This article has been accepted for inclusion in Medical Student and Faculty Lecture Notes by an authorized administrator of the Jefferson Digital Commons. For more information, please contact: JeffersonDigitalCommons@jefferson.edu.
Lecture 18, 21st. Nov, 1863.

Velocity of a Ball varies.

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

Remaining velocity.

Terminal velocity.

(To containing of U.S. Army)

Having studied briefly nature of projectiles, we are now prepared to study the character of the wounds they produce—An apology for bringing what are known as

Gunshot Wounds. From the projectile itself, or effects of projectile may be combined with

2d. A foreign substance. (a) clothing, cap, paint.

(b) accoutrements, belt, canton, musket, etc.

(c) external object, e.g. Grain, stone, brick, etc.

(d) portions of human body, attacker, etc.

In the face, nose both in eye—Anterior Case, or bullet in head—hemorrhage.

(e) from particles of powder.

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

A Ball may enter & lodge without fracture of bone.

A Ball may enter & lodge with fracture of bone.

A Ball may enter & lodge without fracture of bone.

If Ball emerge, it may divide or lodge with or without fracture, or emerge by one or more openings.

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

A Ball entering, with or without fracture of bone, may emerge by

Narrow passage, or the mouth, or anus, or be discharged through fistula.

A Ball may emerge at wound of entrance.

A Ball may extrude in the body.

A Ball may graze or plunge, or produce broader wound.
Changes in shape of Ball. Innumerable, may be split, regular, or irregularly by cone, or flattened, or truncated, or balanced at base. Explain frisco.

Segments of Spheres. Explain this instruction

Remark: No ending.
Projections charts to
Station Constant
Bath - balls & shells
Determineod
Flight plans of
Front of black - January 12
Arrival of the U.S. Army during war 1861—

1. Three months' men armed with old smooth bore muskets of 1822 (cal. 69) altered to percussion lock, or the smooth bore of 1842, which was new percussion lock. Those of the N.Y. State Militia might have the Springfield rifle of 1855, obtained from the State Quota. Regular Army; all had the Springfield rifle of 1855.

2. First 500,000 boys. 25,000 had Springfield R.P. Marked, which was all that could be got in that year. Some of them were American marked, and all the rest of those unpressed arms, were designated to N.Y. of Pennsylvania. The rest remained by the army had smooth bore arms, of which about 125,000 were of inferior foreign make, the balance American. At Sheriff probably 45 of barrels had Springfield arms.

The objection to the smooth bore, was, which was allowed the percussion, then after war its large caliber, or heavy ball. The men could not carry sufficient ammunition — the preferred caliber bore, 58, or now 50 Eng. 50 caliber bore, 57, etc., many of these guns, were used, and loaded with ball to effective range of 300 yards. This number, at 700 yds. The limit of ordinary covering, but will hold at from 1000 to 1200.

Now the long projectile is almost entirely out.

Cavalry. In early part of war, Saber, Recovory. Subsequently Sharps Carbine, as soon as they could be made.

Batteries. First, small box; then all rifles, new mixed.
Now consider phenomena of entrance of ball; of its exit; of its course &
death; of its lodgement; & effects of shot-balls.
These are influenced by size & material, but especially by shape &
velocity of ball. Examine facts relating to.

Entrance & Exit Wounds.

Discussion concerning. Old versus new to penetration & entrance, through
being from same to denser medium, & reverse.

Character of entrance & exit of round ball (smoothed) at moderate range,
if round, slightly larger than ball, visible, with sharp edges.
If wound of same ball, larger, more irregular.

1. Of round ball from Rifle, apt to be burning tissues more cleanly
out, a sharply round.

4. Of round ball from a Carli pistol, lunched like a chip.

Elongated Rifle Ball. Character of round depends
somewhat upon how the ball strikes, whether front foremost, or
at-right-angles to surface, or at an angle, or laterally.
In first case, circular, not shaped a triangular & irregular; round
but necessarily longer than diameter of ball. Sometimes large in
entrance wound. Probably influenced by velocity of ball, & its
impact relation on its long axis.

Oral wound where the elongated ball one a Waving surface,
or at an angle:

Linear wound may occur over a bone, or in tissue or hard
bipart, where a ball is deflected by elasticity of the bone,
bipart. Elongation is heard from bone, sounds &
Wound of Exit. Some elongated Rifle Ball still more irregular than

Wound of Entrance. May be greatly injured by fragments of bone, &
or the ball may be deflected in its course.

The above remarks as to wound of entrance & exit, only apply to the perfect
ball, if the ball is contaminated or deflected, or打击 a dense substance
or meether, the wound may vary. So also appendages.
Course of Balls. On general supposition that—
Deflection of round ball, + Conical and. Cause, glancing on bone, or hard tissue: perhaps &namic action of muscles.
Apparent deflections caused by change in position of Soldier.
Track of Elongated ball, large and irregular, with
Great destruction of tissue. Separation of Subcutaneous
cellular tissue, around wound of Entrance.
Effect of the Ball on
Bone. Shattering, comminution, perforation, with or
without fissures—Fracture does not often occur,
especially in young bones the King between the
Shaft + Epiphysis.
Elasticity of skin, may present Exit of Ball, which
May rest under Skin.
Muscle. Great destruction—Subsequent Atrophy.
Nerve—Vein—Arteries, escape of the latter
in round 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. Larger
Members as round shell—12 pdr. Shell case, or
fragments of Shell. Foreign Substance may
lie, alone or combined with Balls.
Cyclops, in left joint—Basket ball in back— in neck.
In great Contusions—Heart's, case, ball
—in thoracic pancreas, + in hip. These are exceptional
cases; they generally give rise to irritation, inflam.
and suppuration - long-standing may result, as from presence of clothing.
Sedged in bone to other bony bits, cartil. necrose, suppurative deposit of bone - suppuration - gangrene, tbc.
Pyramids - In skull cavity & epidural etc. In all cases to be extracted -
Relation probe - forceps etc.

Hemorrhage. Not so rare, nor so common.
On battle field - serious ship - arterial, according to size of vessel.
Round ball may crush artery - elongated can still injured.
Examination of dead on battle field, most common in head, or from internal hemorrhage in thoracic or abdominal cavity.
Nashville Lecture
Also to be part of
Jefferson College Jubilee Lecture
1871 J.S.
Oct. 27th, 1861

[Signature]

Mr. President: and Members of the Military Medical
Surgical Society of Nashville,

I appear before you to-night, 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 if suggested by our daily observa-
Tions.

Few, never in the history of Military
Medicine, have been so richly bordered by
Salutary improvement, and for the
Advancement of our Craft, as those
Which we now enjoy.

It behoves us then diligently to glean,
But carefully to garner those precious
Experiences, such as, how so unexpectedly
Spring from the rank foliage of the
Crumbsoned fields, over-which our
Pathways lead.

For Gentlemen, it is only
Upon the field of battle, or in great military hospitals, with the thousand inmates, that the Student of Surgery of War, may hope to find his School.

Quaintly, yet sincerely was it said by that Apostle of our Art, Good Old Ambrose Paré, that

"for the Chirurgion, 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 Paré 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 past. Viewed 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, to See, so to profit from our lessons of the present; that hereafter professional generations may turn to our book, as we in our own say, look back upon the labors of surgeons, and of...
Flight of a Ball

1. Faulty Construction of Barrel
   A. Incorrect Clearance of Breech
      1. Date found
      2. " " " Charge, Impulse, Quantity of " " " " Delivered ball Centre of Gravity through place
      4. By Gravity
      5. " " Atmospheric Resistance

Here Three lines:
1. Line of Sight
2. Trajectory Line of Sight
3. Trajectory Point Blank

- Parrying Velocity of Ball
- Initial Velocity of a Ball, about 1800 ft. in Clay Ball
- Remaining Velocity

Terminal Velocity, If the Rotation of Clay Jaded Ball

- Position of ball in relation to trajectory influenced by Centre of Gravity of Ball
- When a ball is discharged, its moment 1. of Impact 2. of Rotation

Deviation of Balls, Collapse of Bore
The Great War's effects have been one of the most significant features of the 20th century. The conflict began in 1914 and lasted until 1918, with various countries and alliances involved. The effects of the war were widespread, affecting economies, politics, and society in many countries.

The war was fought on multiple fronts, with significant battles fought on land, sea, and in the air. The Battle of the Somme, for example, was one of the bloodiest battles of the war, with over 1 million casualties on both sides. The war also had a profound impact on the political landscape, leading to the establishment of new governments and the breakdown of old ones.

The war had a lasting impact on the world, shaping the course of the 20th century and influencing events that followed. The collapse of empires, the rise of new states, and the establishment of international institutions were all outcomes of the war.

In conclusion, the Great War was a significant event in world history, with far-reaching consequences that are still felt today. Its impact on politics, society, and culture cannot be overstated, and it serves as a reminder of the importance of peace and the need to prevent future conflicts.
In the year 1810, the invention of the percussion cap was announced. This cap, which was a mixture of powder and a metallic compound, allowed for a much more reliable ignition of gunpowder. The invention quickly spread throughout Europe and the Americas, revolutionizing the field of firearms.

The cartridge was first made use of about 1743. The cartridge consisted of a case containing a measured charge of gunpowder and a small amount of primer. The cartridge was loaded into the firearm’s chamber, and the ignition of the primer caused the gunpowder to ignite, propelling the bullet through the barrel.

The bayonet, the new universal appendage to the arm of the infantry, was first used at Tuyeres in France during the War of 1870. The bayonet allowed the soldier to close with the enemy, making it a formidable weapon in the heat of battle.

The musket, a smoothbore firearm that fired a single shot at a time, was the primary weapon of the early 19th century. It was a significant step forward in the evolution of firearms, providing soldiers with a powerful and reliable tool for combat.
The invention of gunpowder at all events as far as European nations are concerned, dates probably from the 13th century. The earliest piece was a gun...

The earliest piece was a gun...
Ratio of shots to hits. Practical and effective in the brick market hence 1 shot to 10 hits. It was still customary in armies. It is difficult to estimate the ratio exactly between the number of shots fired in battle, and the number of men killed or disabled. The ratio in the British army has been variously estimated at from 100 to 100,000 bullets fired, in very small part due to combat. In the American war, it has been stated that the French expended more shots for every Roman disabled. In our own time it is believed that the ratio of shots fired to hits made is far off. (Other must what I can believe.)

Chances of American 125 American 1200 cartage to each soldier, granted a separate order, 18th day in 18.

The rifle, to fire, the barrel of which contains within a number of years, to fire to each other and lying a fruit from the impact to the muzzle admission. The object of those guns is, to demonstrate that ball, cartridge; and to impart to the bullet the proper velocity of its own after.

Withage, is the distance between the diameter of the projectile, ball, shell, or whatever, to impact. The projectile is not come through the barrel, attains a velocity from being to fire, thus losing both velocity and energy of carriage. The greater the incidence, the greater is the loss of velocity, and the more the deviation of the projectile from its true course. If

slight - Medium, can only be detected, if...
In 428, St. Vitalien of Thiers wrote, among other matters, a condition
which allowed, in chief, of Thurs, construction, to be the land
of the enemy, to be quiet, to become celebrated, as the
fist of the mass, the present - This estate has provisions in the
chamber, for the charge, of the chamber, that the remains of
the gun - The bullet made use of was a lovely filling round
head bullet, which in turn the head directly at the muzzle, t
arrow
allowed to pass, while, it entered the breech chamber in front
of the charge. It was then struck heavily a few times, slowly
with a heavy amount for the fourteen, after the bullet
the left the scene,
the few shots, from a heavy numeral, the bullet to
a new place. It then came in to take the place of the next.
which in general terms, is the interior chamber of the rifle, as far as
which has been long been known, but the principle of which has been
 imperfectly understood. The first rifle is said to have been made
in Vienna about the year 1570. It seemed to have thought
from parallel to the barrel of the bow, but which was intended simply
by the manner made
afford cares in leading lightsetting balls. It was all assumed
found that the effect of the rifle could be improved
by simply fixing the slider in grooves, in similar lines
by the French and Germans; and the value of the rifle began
the attempt; the slider in a grooves and this had been conceded
long been recognized. Its effect, hence, as
its carriage used to command it as a weapon than
was yet concealed. Conceived
by military authorities, but not entirely
true, that during the last century attempts were made to introduce the rifle and military
the bodies of riflemen, charcoal burners, or tallowmen were attached to all large
command. But these command, although available as skirmishers, could not
be made to act in the same manner as the infantry of the bay. The rifle
riflemen, was heavy and unwieldy, was limited with difficulty, and after a
few discoveries taken from the discovery of the powder.
It
was in fact a weapon likely for the use of skirmishers and partizans, 5 or
which was largely employed in the American revolution in 1776. During the
years of 1776 to see if the use of the rifle was introduced to the French army,
although every effort was made to hinder the French soldiers to use such
amateur marks in the armies. It will stand to be seen (over)
that the rifle itself is by no means a modern weapon, although its adaptation to it of a peculiar feature for ground
measuring six, is of importance. Proceeding
The problem to be determined was the construction of a projectile
which could be loaded and fired easily, a barrel could be made
It takes the rifle of the French artillery.
The line beneath the page was crossed out.
It will great effect by the French Chasseurs, during the Italian Campaigns.

The charge, as is known, to the arms of Gen. M. Vendome, with which the French made their first appearance in Europe. The French Chasseurs were known to be the most expert and daring in the use of the charge, and by the use of the French Chasseurs, the French made their first appearance in Europe.

The charge was composed of a small charge of black powder, which was thrown into the breech of the firearm, and the powder was ignited by a small match. The charge was then fired, and the resulting explosion was extremely powerful.

The French Chasseurs were known for their ability to use the charge effectively, and they were able to use it to great effect during the Italian Campaigns. The charge was used to great effect by the French Chasseurs, and it played a key role in the success of the French forces during the campaign.
Another rifle which has attracted much attention in England, and which is indeed considered superior in nearly every respect to the Whitworth rifles, is the celebrated Whitworth rifle. The peculiarity of this gun is in its bayoneted bar, with a groove at the extreme end. The bullet is described by the bore in about one turn in 20 inches. The principle for this rifle is of a hollow casting of lead, and is somewhat in the shape of a bell, its length being equal to three diameters. The bullet, its accuracy made, its body being at length flattened by hammering, was not made to fit the case. The range of the Whitworth rifle is very great, from 1700 to 1800 yards. The velocity is distinctively rapid, but it still has a certain accuracy of direction. This feature was employed in the event of the Rebel States secession of the Treaty of Vaxjo, with tonnulet effect. In one instance in which a claim to the knowledge of the latter, a bullet of the army of the Prussian roused was hit by a Whitworth foot bullet, fired forty yards from the distance of a mile at least, to which fact it is still unexplained.

Another gun rifle, also a famous English letter of 46, named the Whitworth, which is considered more powerful, is made to suit the accuracy of the range of the bullet, and to be very strong, but its employment on the Rebellion has probably been at a maximum.
The M1917 Rifle, known as the 'Springfield pattern', was a standard military rifle designed by the U.S. Military. It was an improvement over the earlier M1903 Springfield rifle, with a longer barrel and an improved sights system. The rifle was manufactured by various companies, including the Springfield Armory. The design was used by the U.S. military in World War I. The rifle was later replaced by the M1 Garand, which was adopted by the U.S. military in the late 1940s.
Dens-mygelites
Atlas
Advent
Joint wound
Long bones

Ethmoid
Head
Chin
Nose

Deep symphysis
Gen. program written in aid
Abdom. Transliteration.
Gentlemen, Fellows of the College

By the terms of presentation of the charter, it is provided that the same Council of declares to be annually delivered under that

&c. &c. &c. I shall be upon some point or points connected with the surgical pathology,

The topic which I have selected for

Our consideration in the meeting center at

That of "Gunshot injuries."

But although this subject in itself, is one

Of the most fertile subjects, 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

Faced most strongly upon the profession the

Consideration of this class of accidents—But

Happy for us that time has passed away,

The people's mind is no longer

Dwell upon the desolations of war,

Pacified, to devise more ample means

For the destruction of human life,

For now our land is at peace;

And, with this all healing wings has already
Already bled and many a score left lankling 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 savages of war.

In a word, the curtain has gone down, wearily, upon that most hideous 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.

That it is as surgeons, 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 thirty-six thousands casualties, that I now ask your attention.
It appears the document contains a table with measurements and calculations. The handwritten text is not fully legible, but it seems to involve some form of data recording, possibly related to a scientific or engineering context. The table includes columns and rows with numerical values, and there are calculations at the bottom of the page:

\[
99.90 + 
\]
1. Anatomy of Protractors
2. Theory of Flight of Bullet
3. Effect of Bullet: Stopping a Soldier—Symptoms—Shock—Death
4. Local Effect on Tissues—Entrance & Exit etc.
5. Thémaat — Bone & Tissues
6. Head
7. Lung —
8. Belly —
9. Cellulitis—Gangrene—Erysipelas—Tetanus
10. Secondary Hemorrhage—Tetanus
11. Osteomyelitis—Gangrene—Erysipelas
General Principles—Transportation
well supplied in this arms, & ammunition, as early as the
1861. The Enfield rifle at that time been manufactured in large
numbers. Very many of these troops, were also armed
with the Mississippi or western rifle, a peculiar
which a short hand, carried, being
lanes into the Banks of

As a
rule, it was in the interior regions of the South, although
in the manufacturing plants, were substitued. As some
of them, as for example the tredjar arms, which contained
the ramrod gun machinery forms to the 7th
Harper's Ferry arms, & 6½ calibre & 12-inch arms.
were turned out, which were used in the field, & had been

At the commencement of the
War, the County home was a favorite branch of the Union,
with the enlisted men, most frequently every Third
one being well mounted. Those arms
in the battle, & especially in the last
were the standard arms, & not infrequently

Were not been carried in addition a double
ramrod gun, for use. The latter here as a
rule relied on action quietly in the heat of the

The confidence, which of the/ & was far
beyond that placed, and because of this

This confidence is free arms, how by them carried to far, and compelled them
at a later point, check on the line to treat le hard to hand
Conflict, the battle charge of the Cavalry

Defensive Arms. The variety of offensive arms had been employed in an earlier
by the Secretary of War, & the new attempts were made by New England
Company to produce a better service. These pieces of superior quality were made
by the firm, & were popular in the Federal armies. The firm
was taken from the body of a rebel officer in Petersburg.
The British army proposed to send by the deaf infantry two of nearly 700 men.
The reserve line, obtained from different battle sites, the series of
Various English and Continental officers.
The Union’s Army of the Potomac acted...
early were large calibers), slow made hand, of the rich, consisting a ball of such weight, as rendered it difficult for the troops to carry a different amount of ammunition. There after muskets were brought called in other places supplied with the regulation 54-pounds Mr. H.M. of the calibre of 58. As many of the English a field of 57, 58, and 59, an elongated bullet, since of a calibre of 774, a state, for all known rifle muskets of Berone was adopted. The character of

Nail of the Cavalry Service. In the early part of the war, the mounted troops were mounted with sabres and Edwardly pistols, of large

size. In addition to these, they were equipped with

three or four loaded cartridges of forty shots, and

these were loaded per day, so that they could be prepared

4 ft. a. later, so to speak, and after this, the disbanding

of a Cavalry. Namely, this issue of arms was made

it was a hand

and the sabre has adopted that each cavalryman

should be armed with a saber, and only one pair arm

at six o'clock, with the sabre - The

which were mostExcellent, were the Sabre of Henry

Whiting, and in those Cavalry, sabre, the sabre

Whiting, which was made, Cavalry sabre, and sabre, the sabre

Whiting, which was made, Cavalry sabre, and sabre, the sabre

Whiting, which was made, Cavalry sabre, and sabre, the sabre

Whiting, which was made, Cavalry sabre, and sabre, the sabre

Whiting, which was made, Cavalry sabre, and sabre, the sabre

Whiting, which was made, Cavalry sabre, and sabre, the sabre

of the sabre

and sabre, the sabre

Whiting, which was made, Cavalry sabre, and sabre, the sabre
The three bridges first called into service in the early part of 1861 were known as the "three monitor men" and were armed with the old smooth bore arma of the pattern of 1823 (カルフ69) almost to percussion. The new model of 1849 was known as the "two monitor men" and was armed with the smooth bore model of 1850. A few were of the new three monitor men and the new Springfield rifle model of 1861. These were obtained from the States and were furnished by the U.S. The infantry of the regular army were all provided with the improved Springfield Arm.

The five hundred thousand men was called for by act of Congress in July 1861. To these troops twenty-five thousand were provided with the Springfield Arm. The rest of the number were armed with the old flintlock arms, of which about 125,000 were of inferior foreign manufacture. The improvement of these arms can be traced at that time as late as the regular Army of the U.S. was about 1860. These arms were chiefly used both in the Army of the U.S. and in the Army of the Free States of the U.S. The chief objection was that they were almost the reverse of the flintlock arms, and that they were almost the reverse of the flintlock arms. The chief objection was that they were almost the reverse of the flintlock arms. The chief objection was that they were almost the reverse of the flintlock arms. The chief objection was that they were almost the reverse of the flintlock arms.
(Handwritten text not legible due to quality of image.)
Springfield - Union Army Aug 10/61
Belmont - Nov 7/61
Fort Henry - Feb 6/62
Nashville - May 16/62
Shiloh - April 7/62
Carnota - May 30/62
Savannah - Oct 18/62
Perryville - Oct 7/62
Monterosa - Dec 31/62

Richburg - July 4/63
Art Hudson - Aug 6/3
Chuckaman - Aug 7/63
In Kent - Nov 22/63

Williamsburg - May 4/62 - 7 days
1 Bull Run - July 21/62
2 Bull Run - Aug 30/62
Chambers - Sep 17/62
Fair Oaks - May 31/62

Fredericks - Dec 12/62
Chancellorsville - May 2/63
Grate Middens album
July 4/04
consequently forced into the groove of the rifling, the cavity centering to their
midpoint to the bullet, while at the same time the groove or grooves
are thoroughly cleared by the backing of the fine dust and powder.
The length of the gunpowder particle passes through the barrel, so
that the agent (particle + gas) that the projectile is carrying with
it is an effective projectile. The length of the projectile was
not so excessive as the projectile's length. At the same time
then to clear the cavity from which it may have been discharged. It has been the
cavity of which German remarks to carry the back. The
cavity's effective part in the proportion of about one to two
of the loading of the bullet.

Aside from the simplification from a practical point of view the projectile
is one of great interest. It may be considered by the author that the
projectile is a body first long pressed upon any external object. They
form the walls of the cavity have fallen place, the
projection of the bullet becomes
projectile may be slightly tilted in order toJT

The concept that through the first
can even to his with undue care is too daring to explain

---

**Bullet**

The projectile, about the point of rotation is a compound of spherical form,
around the curve of three feet; the bullet centering in the
one another the other. Which in the barrel of the piece
its action is that of a single bullet. The cylinder
inside the bullet's constant motion. The bullet's projectile
has been employed only to a limited extent.
from which it is proof has a diameter three times,\[\ldots\]
for years, in which the bore is \$20\$ inches. The enemy\[\ldots\]
was a very good, to the force & striking impact to the
barrel of the gun. In an action which came to
the knowledge of the South & knowledge of the army of the
Petersen became one of the 1st-ten to 1st bullet which
penetrated the cannon with little break.

Explanations

Exploded Shell bullet. A projectile which this opponent has been much employed

of the front of cannon & ammunition

known to have been discovered. The construction of this
projectile will be described by reference to the end. It consists of
a large capsule filled with powder, embedded in the body of an
alcohol & 1/16 inch diameter. The burning charge
in the capsule communicates with the explosive surface at
the base of the bullet by a time fuse, and explodes in
the mouth of a tree after the charge is fired by the
lance at the rate of about 150 feet from the muzzle of
the piece.

I am directed by a party of good authority that an
explosive percussion bullet was employed in the battle at
Holly Springs, etc. I am directed to communicate this
information to the Secretary of War.

I have been informed that the firing of the bullet

in the body of a 10-pound-

shot is the practice of the projectors, which act in the
percussion principle, to prevent all a bomb from

but it is.

The use of the explosive bullet is not altogether novel. Experiments with
an explosive bullet were made on the work at the year
of General Scott of the East Indian Marines, among a
model of an 18-pounder. The idea was conceived by the officer
the loading bullet of the French nature has also been made
by him, in the year of 1814. It does, at least, appear
that better than projectiles have been being
employed by the English infantry in the British army...
The Englishmen, from the improvement of their field-guns, as before mentioned, are now armed only with muzzle-loading guns; and the practice of this sort of gun has led to an increased length of bore. The necessity of having a large scope, the comparatively long barrel, and the increased length of bore, required a change in the way of loading the gun. In this case, the powder is put into the barrel and the ball is rammed down it. The gun is then fired, and the ball is shot out. In this way, the gun is loaded and fired.

In the meantime, the Englishmen have been perfecting their system of long-range guns. They have increased the length of bore, and have made the gun more accurate. The long-range guns are now capable of hitting a target at a distance of several miles. The Englishmen have also improved their system of loading the gun. They have made the loading easier and more efficient.

The Englishmen have also improved their system of ramming the ball down the barrel. They have designed a new rammer, which is more efficient and easier to use. The rammer is made of a long, pointed stick, which is inserted into the barrel and used to ram the ball down. This new rammer has made the gun more accurate and more efficient.

The Englishmen have also improved their system of sighting. They have designed a new sight, which is more accurate and easier to use. The sight is attached to the barrel of the gun and is used to aim at the target. This new sight has made the gun more accurate and more efficient.

The Englishmen have also improved their system ofesperating the gun. They have designed a new system ofesperating the gun, which is more efficient and easier to use. The system ofesperating the gun is used to make the gun more accurate and more efficient.
The breach loading. Point to the left, choir the barrel. For the
bar the barrel, it running part of various patterns, such
forward cavalry, I toward the close of the contact
Continue the chance reflecting rifle for a body, protect for the most
perfect weapon known. The cartridge of many
forms, of brass lead, especially the cartridge and rifle
the generally metallic and water proof. The detonating
powder for the ignition of the charge was fixed in the rear
of the cartridge. The use of the percussion cap was
therefore cut; and great refunds of fire were
attained.
The introduction of the improved cannon for

Artillery was greatly followed by a change in the construction of cannon. Improvement being the object at one time cannon were simply cylinders.

By the latter method a piece of wood was cut out of a large log and a hole bored in the middle, with a bored out through the middle of the log. The finished cast iron cannon were either made of iron or bronze, with an iron note of metal at the breech. The

They then constructed a seam for the top of the cannon to be a seam for the top and

Shell of cannon was a seam at as well as the base

time to the addition of the printfed gun. Cannons were made in a mass of tubes at comparatively low cost. But the addition of the printfed gun the properties of the

Shell was fitted into the brick building cannon and seemed that, more shell, more power, and less costs. Now the

The improved cannon were the ones constructed in

The 2nd Shot, a Shot, was the shot, the heavy known as the Cannon ball. A firearm to the gun, depending on the

The Cannon ball was designed to be the power and

The Shell was a bullet that was designed to be the power and

The Shell was a bullet that was designed to be the power and

The Cannon ball was designed to be the power and

...
(9)

In a stand of grape vines, we found that the iron balls placed two and a half

three feel one in line of the others, and returned it pointed by three

iron plates, with broken in line of the heavy iron crown

in the top. We have the line of shots from the field guns, and

the shot plate, and the muskets with this ammunition. It has been

employed by the whole army.

Comment.

The form of projectile is clearly indicated to do effect the

attachment of an enemy at a certain point. It consists

of a ten cylinder or can, filled with cast iron balls of 26 pounds. When this vessel is

percolated through the ammunition, it will cause a

supernatural effect from 300 to 600 yards

shattered to pieces.
The following are the chief varieties of Elaborated Projectile, furnished by the field artillery as in former wars.

**The Notched Projectile** - This is composed of three essential portions, first a cast iron, conical body, secondly an iron base or bulwark, and third an intermediate band of lead at the base. By the explosion of the charge, the bullet is driven forward when the body of the projectile, striking the leaden ball, which is then forced to strike the edges of the gun.

**The Schenkel projectile** - This consists of a cast iron conical body, cast with a conical case. Around this case the place is wrapped the expanding portion, a thick lead of proper make. By the explosion of the charge, the lead is forced forwards in the case, so as thus forced into the interior of the case, it is then forced to form the muzzle, the lead is thrown to reach the target.

**The Parrott projectile** - is an Elaborated cast-iron ball, after the manner of which a brass gun is cast. The gun from which the lead is discharged, the gun unites itself to the case of the shell ball, which is made to strike the ground.

**The Parsons projectile** - is a smooth round shot, which, when it strikes the case of the gun, leaves it round, making the gun crooked or curved. The powder, when exploded, makes a backing of smoke. The shot is, and lead, which was expanded by the action of the gun from the body of the case of the projectile.

**The High-explosive variety of the new projectile** - is for the service in case of war cast, with flaps, as there have, correspondingly to the grooves of the gun. By casting the leaden balls with lead, the content between the flaps of the lead is divided.
Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,

which the engraving had to be done. It shows in the text.

its appearance when studied as a whole picture, the

Elaborate projrct for Hotel Canna. 

Here are fully more complicated. Thro.

From which the Manuf. Dept. lends 50 years -

The engraving having been cut. It is now neces-

sary to fill the gap of the proposed to occur in the time,
That although the so-called wind wounds are rarely fatal, there are occasional cases where the wind may be so strong as to alter the轨迹 of the shell.

The following case is an interesting example of such an accident:

For a description and explanation of the accident, a heavy gun, at a critical moment in the action, was fired by a wind that had blown it in such a way that the shell, at a certain point of its flight, deviated from its normal course and struck the body of the man. The wind, however, had been so strong that the man was thrown to the ground, and the shell, as it passed through the body, did not penetrate it completely. The man, although severely wounded, survived, which is a remarkable instance of human endurance.

Another case, although not so severe, is worth noting. In an emergency, the shell struck the body of the man, causing him to fall to the ground. The examination revealed that the man had been hit by the shell, but the wounds were not serious. The man was able to recover fully.

In this instance, a shell of similar dimensions was fired by the author during the battle of the Confederates in 1864. The shell was aimed at a point on the ground, but due to a strong wind, it deviated from its intended path. The wind carried it to a point where it struck the body of the man, causing him to fall to the ground. The man was able to recover fully.
The actuation or operation of the gun is performed by a spring, which is tided or cabled, and which, when released, transmits the force of the charge to the gun. The gun itself is a relatively simple device, consisting of a barrel and a breech. The barrel is a cylindrical tube, usually made of metal, and the breech is the opening at the rear of the barrel through which the charge is fed.

The efficiency of the gun depends on several factors, including the quality of the powder used, the design of the gun and the angle at which it is fired. The powder is packed into the barrel, and the gun is pointed in the desired direction. The trigger is pulled, and the spring is released, causing the charge to be ignited and the bullet to be ejected from the breech.

Invented in the late 15th century, the gun quickly became a staple of military arsenals around the world. It was used in a variety of ways, from hunting to warfare. The gun revolutionized the way wars were fought, and its impact on society was profound.

The development of modern firearms has been a ceaseless process, with improvements in design and technology occurring at an ever-increasing pace. While the basic principles of gun operation remain the same, the materials used in their construction have evolved to provide greater accuracy and reliability. Today, the gun is a common sight in many parts of the world, and its history is one of constant change and evolution.
The reader's annotation, as quite complicated. The council of metal line the channel of the projectile. These into contain disturbing forces, which is found explained by the action of a metal line called a plume upon the impact of the projectile and its force disturbance. To consider all uncertainty, take the core of projectile formed in one piece of the channel. The metal line is released at the same time. The reader has shown the specific details of the outer shell. The plume is expanded by the force of the metal line. Often the order is frequently called when the metal line is released away.

        [Image 0x0 to 654x1052]

Grenade

The hand grenade is a species of shell, of small size, intended to be thrown by hand, by the officers of an army upon the enemy. For the purpose of this work, it may be useful to show an enlarged section of a hand grenade. The cover of the grenade forms the last line of defense. The plume is released at the same time. The hand grenade, armed with the explosive, is thrown as far as possible. The cover is cast aside in a hand grenade. The core of the grenade, when it is thrown, is the compact among the enemies of the enemy. By the few pieces of this grenade, exploded many of the enemy, causing severe damage to the defending soldiers. The metal line is expanded by the force of the impact on the enemy. Occasionally, when the hand grenade is thrown, the metal line is released at the same time. The plume is expanded by the force of the explosion.
Theory of Flare—In estimating the height of a projectile, the law following must be borne in mind:

1. The line of flight, which is the normal ray, passing through the highest point in the path of the trajectory of the piece, and directed up on the object fired at, Clifford. The line of fire, is the perpendicular of the axis of the piece in the direction of the muzzle.

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

The angle of the projectile, or the trajectory, may be a matter of interest.

A projectile, the time a target is observed to move over a certain point, and its movement, is the distance travelled by the ball before it leaves the gun. Point Blank, is the point at which the line of flight ends the trajectory for the second time. Point Blank range is the distance of this point from the gun's end in a straight line, which the gun is directly aimed at.

Point Blank range is the distance of the point from the gun which can be hit at the point where the gun is aimed directly at the object. In the British system, it is called the Parley Blank. This Blank distance is straight, and is the distance forward of a bullet before hitting the point. When fired from a piece where aim is perpendicular to the horizon.

The velocity of a projectile is the number of feet per second of space, measured in any given second of time. Initial velocity of a given projectile, is the speed of the projectile as it leaves the gun. The speed of the projectile over any necessary distance in the remaining distance. The velocity with which it enters the object is known as the final velocity. The initial velocity of the given projectile is found to have a maximum range of about 1,000 feet, or the point where it is aimed at the bottom. The velocity of the given projectile is found to have a maximum range of about 1,000 feet, or the point where it is aimed at the bottom.
A ball when discharged undergoes two very different movements, transport from a volcano of the projector, and the movement of rotation or precession. I proceed to discuss the movement of rotation, upon its axis. The result of this will depend upon the moment the ball leaves the muzzle with the velocity of the bullet. This is not done directly, but after a short time, with considerable velocity. The ball, after leaving the barrel, the direction of its motion will be governed by the wind, from the wind, and the place where the bullet strikes. The result upon the bullet, that is, the bullet's center of balance, will be a consequence of its action upon the ball. The velocity of the bullet, in conjunction with the wind, will determine the direction of its motion. The wind will also affect the trajectory of the bullet. The velocity of the wind will be affected by the wind's velocity at the point of impact. The wind will affect the trajectory of the bullet.

The wind acts on the ball, affecting its trajectory. The wind will also affect the trajectory of the bullet. The wind will affect the trajectory of the bullet. The wind will affect the trajectory of the bullet. The wind will affect the trajectory of the bullet. The wind will affect the trajectory of the bullet.

The wind will affect the trajectory of the bullet. The wind will affect the trajectory of the bullet. The wind will affect the trajectory of the bullet. The wind will affect the trajectory of the bullet.
The termination of a flight. If the force of a current
moment. When the circumstance alters the
change which

the current in the column of the column

The current in a column of a current is a

force which is apparent, but the force

that point of its approach. When the force of

and the column of the current becomes

is important, for the current to be there such a

in a strong wind, and in a current in the clay

projects it into the water, and when the

of the water of the wind, and when the

and the current is deflected by the wind to the

which have been deflected on the other side at

the column a different degree of force has

the first resistance by the wind. The column

and then description of the column in its

projects, the column of the wind breaks off

force, and the direction of the wind's force.
and rotation upon its axis imparted to it by the rifles of the piece during the first part of its flight, gradually passing into a conical motion, similar to that described as occurring in the loft 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 projectile. The surrounding character of the wound produced, especially the wounds of entrance, can often times only be fully understood upon careful study of the nature of the projectiles themselves, and of the disturbing forces which influence their flight.
Observation of Value of Injunctive

Small
Round - Elongated.

For Market - 700-800 Yards.

Cables - 400 yards.

Propagations of 

800 yards. Every part of a man's body, from, say, 

500 yards of the face - but head, legs, arms, movement, 

600 yards. The head of the lower part of body can be made out.

700-800 yards, body of elongated.

900 yards. But chest.

1100-1200 yards. No face, but marked.

Infantry - 1000-1200 yards.

Column: Round - to 1000 yards range - Precise.

Elongated - too great distance, but shot by direct hit.

Battery - no position.

200-500 yards. Exceed not here.

Shell - left accurate. Own school shot - demoralizing - Idea of penetrating.
Arriving of the U.S. forces, during the war of the Rebellion

Necessarily 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 (caliber .69) altered to percussion locks, or else with the smooth bore percussion muskets of 1842.

A few Regular Regiments from N.Y. and New England carried the new Springfield muskets of 1855, these were obtained from the Quartermasters, due to the respective States, by the U.S. The infantry of the Regular Army were all provided with the improved Springfield flintlock arms.

The 70,000 levy were called for by Act of Congress in July 1861 - to these troops, 25,000 Springfield flintlock muskets, all that could be provided during that year, were issued - with these the few Regular troops to the Western armies were equipped. The first 100,000 were distributed to the troops of the Army of the Potomac.

The muskets of the levy were furnished with smooth bore muskets, of which 125,000 were of inferior make manufactured with these arms to the Eastern armies.

During the latter part of the year 1861, the Greenbacks were barely deployed on growing the smooth bore arms in stone - at first as this could be done, they were issued to the troops in lieu of the old muskets 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 or thereabout, demanding a ball of such weight as
unnecessarily difficult for the foot soldier to carry a
sufficient amount of ammunition. These altered
muskets were subsequently called on
and their place was supplied by the regulation
Brownlee rifle, musket, carbine, .58
. As many
of the English RIFLE rifled rifles were still in use with
a caliber of 1/2", an Elaborated Caliber of
suitable for all the rifle muskets in the service
was adopted by the Ordinance Dept.
the caliber was still further reduced toward
the close of the War.

Fine-Firing. During the war a few regiments
long range rifled they tended to act as sharpshooters, were
employed with fine-firing heavy tapered rifles
of long barrel. From these marksmen much
was expected, but it was questionable, despite
the newspaper correspondents, whether the
at any time inflicted terror, upon the
enemy, or realized the anticipations 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 sabers, 76 bore, long-
barrelled pistols of large size. In addition they
were frequently furnished with breech loading
Carbines 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, that time of arms and models and it was ordered that each cavalry man should be armed with a saber and only one fire-arm, either the revolving pistol or carbine.

The forms of the latter, were most esteemed were the Spencer & Henry repeating rifles, and metalized water-proof cartridges were used. The skillful employment of such admirable long range weapons went far to contribute to the efficiency of the Cavalry, which enabled this arm of the service for the first time in military history, to the modern, meet to repel the attack of an enemy's infantry.

Artillery — 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 existed were in the country, or they were in the hands 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 Cannon became the rage. Before many months, the smooth bore guns were discarded, and in their place the
new forces were substituted. 

But the experience of the war in the bloody actions showed that the officer in this perfect had been too reposing -

Valueable as the field pieces might be, the 

smooth gun was in its proper place and left to 

The composition of the artillery was accordingly devised, a proper proportion of smooth bore being 

redistributed 

as the end of the war 

The field artillery as now constituted was compose 

of the smooth 12 pounder, and the three-inch 

rifled gun, the two of the Parrott, and the 

pattern of the Ordnance bureau. The 

rifles 10 to 30 fast 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 are of 

caliber one from the 6 inch to the 

monster Swamp gun, having a 

propede of several hundred pounds in 

weight. 

Southern (Rebel) field - Armory of 

It is difficult of course to speak with accuracy on 

this subject. It would appear hence that the 

Southern troops were fairly armed in the earlier campaign 

of the war - at this time other from good 

management upon the part of the Southern 

leaders, only tracking toward the U.S. Government.
The U.S. arsenals in the insurrectionary states were
heavily stored with good Government arms.

There with the single exception of those stored in
the St. Louis arsenals 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
devices were captured in battle by the Insurgents.

The Southern Confederate arsenals in the West were
inconclusively well supplied with arms, and
ammunition as early as November 1861. The Enfield
design at that time had been obtained in large
quantities.

Very many of their troops were also armed
with the Western or Mississippi rifles, a firearm
weapon and one which in Expert hands carried
harm into the ranks of their 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 Harpers Ferry,
extravagant and serviceable arms were
turned out.

Projectiles
The small arm projectiles used by the
Confederate Infantry were of many kinds.
I have obtained from the different battles -
field specimens of the most prominent.
branches of the English Continent's Bullets
At the commencement of the War, cavalry
was a favorite branch of the service with
the Confederates. The men riding their
own horses were well mounted. Their arms
were the saber, revolver, and a
rifle frequently, especially in the west. Each
mounted man carried also a double
barrel. (Cowboy - 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, & it
is now in the A.M. Museum at Washington.

It was taken from the body of a Southern
officer, it is freighted through although it
was pierced.
Menomena accompanying Ball Wound

The care of Soldier broken in action by a ball.

Sensation — May be unnoticed — or felt by pain or consciousness — or Obama

bleed a clothes. May flow

Compared to a Surgeon's

Right Hanger. Strike as a Halley or stick. Compared

from a surgeon's平面compared to an Electric shock. Rather to that than than. Blessed

Appreciation of injury influenced by Allusion, Presence, or

Successful action; or generally Favorable circumstances

In these cases, this appreciation is increased as in Present

Re廿, determining circumstances, or where the Soldier

lacks confidence.

— Sometimes referred to locally, accompanied by the feeling of

occasionally present immediately after injury; or after the

Soldier’s recovery from immediate shock or commotion.

Plan is when Ball at high velocity

Secondary.

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

hours after injury; & is dependent upon pressure

or sensibility produced by Enervation, Stitches.

The Seat

Of the Wound

Can often at a glance be detected, on examination at least by the

Action or Attitude of those shot.

Thus in a general way, in Wounds of the

Lever Extremity, the Man will fall forward or stumble, with an endeavour to break the

force of his fall by his hands.

Upper Extremity — If Landing cock fall beside.

Head — Most frequently pitched forward, or springs, more or less stunned.

Brain — Here, in addition to tingling and electric sensations, then

are often a sense of Involuntary Movements, the Man turning

head, body, or entirely around.
of the Chest. If shot in the chest, the action is often indicative of great anxiety, produced by the expectation of death, and also by the moral effect of the injury, which he regards instinctively as so great a grave.

of the Belly. The usually great shock and collapse from compression produced upon great sympathetic centers. The struck man sinks down helplessly and almost immediately to lifeless.

of the Nerves. In wounds of nerves or where the nerve trunks are affected by commotion, there is an immediate loss or impairment of sensation and motor power.

Pain. - Mitchell says a pain of about 1/3 of these cases.

referred pain. Sometimes referred to the extremities, as in injury of the head, where pain felt at arm and elbow.

referred to the limb. - Sometimes referred to other limb (Mitchell).
In these often but little pain comparatively, in consequence of the shock, general excorla
which accompanies so large an injury.
Illustrate by Shell wound of Back. Belman, 

greatly affect the soldiers' behaviour when wounded.

Paul (Native born), as a rule regards his wound practically.

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

is variable in his demonstrations. - Sometimes gay
and light hearted, sometimes clamorous in his lamentations.

Irishman from Illinois, drunk, pipe in mouth,
with arm amputated just below elbow, "Had a death...

is phlegmatic. - When wounded, he has fulfilled his part of the contract,
Now the Government must do theirs, and care for him.

Of all whom I have seen, the Negro when wounded
is the most patient, childlike, trustful in his medical
attendant - Obedient to his commands.

Think of Negro retaining his arms - the White when
prickled, throwing them away as a rule.

The Celt.

The Irishman.

The Negro.
Individuality of force and of influence. I do not think that even

Fractions would stand death as much as a usually suppose.

How long can I live once saved? an empty affair in the other wise.

The dry dying is unconcealed on in the face that I do.

She knew it best I supposed — "It is very wet, I cannot

You like to lose three larger. But let me tell my father that

You are believe me at the head of my men."

Dr. Philip Sydney at Richmond.

The influence of Death of Castle as I said among to me.

The home of old men to face death, and

It rear up against I want the disagreeing effects of

Injuries received in the line of duty.

It strong is the instinct of self preservation, that

Many a man come to a counsel 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 opposition & contempt of and

Confront comma of danger.

The idea conceived in the Beautiful model:

that "We Napoleon cannot afford to be

cowardly," is not confined to a single family

alone, illustrious as that may be,

I have often been seen going to be

patiently braving suffering heightened by

privation, at the hope that by their example,

the mounting heads of other future sufferers

may be全是 upon the mounting

strength of their lives rise to consume.

Reverend

Commendation?

I need no devil here upon the resigning

extended the sufferers by the powerful effect of

reverend consideration,

Hunting Park at galley, a Christian command.
Excitation or emotion of a strange nature is often seen in those about to die. "The joy of liberty is centered in the act of death," once said to me, by an officer, whose character and reputation were not enviable, and who, around 1865, had been received under the most creditable circumstances. 

Excitation or emotion of a strange nature is often seen in those about to die. "The joy of liberty is centered in the act of death," once said to me, by an officer, whose character and reputation were not enviable, and who, around 1865, had been received under the most creditable circumstances.

Logan's

It seems, itself, sometimes by Logan's

Sometimes, by the apparent effect of the shock, thought of death to be certain, it make a favourable impression.

This is so common, as not to require illustration.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.

Illustrate by Hotel Shot in High Wall of 120 Grades, May 40 Yards.
Shock

The most frequent symptom of injury — the Electrical shock — and even before the military surgeon

Causes of Shock, complex and numerous, and like

do to Shock, involving as they do the study of
the action of the nervous system in all its subdivisions
are uncertain.

I do not purpose to even discuss these theories in
detail, but rather to regard shock from a clinical point
of view, as witnessed early after the reception of J. Shew's

Definition of Shock

We all know what shock, surgically speaking
it — that it is a depressed 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

I may be conveniently classified as has been done by Mr. Jordan of Birmingham in his

Histories prize essay "On Shock after Surgical Operations and
Injuries": —

1. Those which act upon the corporeal organization alone

2. " " " " " psychic or

3. " " " " with the corporeal and psychic elements unequal or unequal

4. Cold

An example of the 1st category may be mentioned as "internal hemorrhage, or
from the rupture of the abdominal aorta.

The 2nd — The Psychic causes are familiar to you all.

The 3rd Class (both corporeal or psychic), belong (unshaded)

Supposed

The Psychic element in this third class, as far as
Mental Strain

far as gunshot injuries are concerned, is constituted by the mental strain, and apprehension, which is a condition of nervous tension which inevitably is experienced by all even the most veteran soldiers who went to engage an enemy. This feeling may be one of anxiety or to 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 a depression which will be all the more exaggerated the soldier becomes a coward. Hence it may be seen that in the condition.

It will thus be evident that in Medical practice, the degree of shock must be determined by the nature of the injury; the man's mental condition; and also the surrounding circumstances, an exposure to cold, a hard-won victory.

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

1. Those of shock unaccompanied by commotion 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 classes in detail and first of
all, accompanied by Commotion of the Brain.

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

As an illustration, let me take the case of a General Shock of the Hip joint:—a picture of the effect is vividly before me. A case the accident was usually caused by death shock—

To what purpose an actual existence,
that last little痕迹存在

We will suppose in really happened, that the
His are little remarkable.

In much a case of Lane found the man
Upon his seat, inclining, swelling feelingly

upward. He is almost a most uncommon scene.

To one sense The man hears you, it raised himself perhaps to your question, but the

Senses are obtained

is feeble, consisting rather 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 colorfully

pallid. The lips are closed, and from the

absence of blood, appear thinner.

The fingers are white, and their plugs lie around the

nails, a condition which has been

attributed to capillary tension engorgement, dependent on a renewing

Current from the veins following the more contraction 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 chaly, and expressionless. At other times, the expression is one of intense anxiety and fear.

With this latter condition, there is often the clammy sweat, and the forehead is covered with moisture.

Eyes. The eyes are fixed, looking upward, with a glassy stare. Most generally mild pain, sometimes slightly covered by the upper lid. Vision is often obscured.

The pulse is feeble, sometimes scarcely felt. It is often slow, and a firm, quivering reaction approaches. It is often too irregular and intermittent.

Respiration is feeble, irregular, and jerky.

From this condition the man may slowly react. On the return of consciousness, he may lie in the 2nd Stage of shock; he may be conscious of 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 a comparatively late period—especially I think when the shock has been the result of burns or injuries affecting to a great degree the peripheral nerves.
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 in cases of the limbs from large muskets. I have also seen it accompany the abolition of the entire limit from the stroke of a cannon shot.

It is often met with in burns and explosions, and I am sure that every hospital surgeon present can call to mind instances of death following in a state of shock following burns, in which the central committee was present, the wound remaining clear to almost the last moment of life.

Shock, accompanied by comminution 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, or of the shock, off an extremity, has at the same time suffered from concussion of the brain or spine, from falling or from being打击 violently again the ground. In such cases the evidence of shock, as already described, may be present, with the additional...
Hemorrhage. I have thus far spoken of shock produced by
removal of shock, traumatic nervous impressions 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 dyspnea.

Hemorrhage. How does blood act? Whether
primarily upon the heart, by the withdrawal of its accustomed supply,
or primarily upon the lungs, thus interfering with blood circulation,
or primarily upon the brain-diencephalic system, then?

Further, decisions of the cardiac action, are matters
for discussion.

But let the explanation of the dynamics of hemorrhage
be what it may, the results of blood loss are constant
and readily recognized by the surgeon.
There is one set of symptoms usually
assumed to characterize, to which perhaps
I should allude — I refer to the presence
of convulsive movements and contusions,
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 on 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
violent hemorrhage, I have witnessed no
convulsion — I have thus been a
witness amid of the Cardiac almost
instantaneously fatal. I also have
seen death follow a laceration of a
large vessel in the pelvis, probably the
colon, 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 relief, rest, and
affection developed to a degree which
was almost commensurate with its nature.

[Note here can be before Peterson]
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 im-possible than another, and will suffer more depression 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 his pulse, his temperature, and his expression of face.

His fears for himself were excessive,

his state of mind was miserable.

Beside him lay a non-fellow,

with a gunshot wound of the upper 3/4 of thigh, but the ball being perforated the muscles and reflected a fatal

Round. He was in 3rd year, bare

injury.

Thus the two had been wounded at the same time, had been exposed to the same sound location, had equally well cared for.

Yet one had suffered from traumatic shock. The other had not. That the shock of the former was only
Mental was sufficiently proven by the fact that a few soothing assurances and a little
morning insighted his fear, brought color to his
lip and a frown 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
predisposition constituting the nervous
envelopment—call it what
perhaps be assumed as the result
of starvation, exposure, narcotics
material, a depresssing affection
of the liver and the brain.

But when it does exert its
influence upon the occurrence and
dergree of shock is undoubted, and it often
produce a startling 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
cause.

Practically as we meet with in the
field these cause, an in combined interaction,
sod that it is difficult to recognize, or at
all events to remove them.
Fortunately the worst is always possible.
Primary Hemorrhage

General idea of "Necrotic Field"

Different opinion among Surgeons as to frequency of Primary H.

[Text continues with various medical terms and references]
If I

1. The patient strikes through the syncope clot from the vessel, or the hemorrhage is arrested spontaneously.

2. The patient loses almost instantaneously from the extreme loss of blood.

So that

The matter of

The surgeon has little to do with primary great bleeding, although undoubtedly, this occurs to a partial extent frequently.

Quot:—My own Observations of dead mfr. Wearing moist.

Nature of arterial hemorrhage—bleeding out of deep vessels—always painfully.

Vascular hemorrhage. I am inclined to believe a more common than

suggested — puddling from black clots on table,

Amateur of Wound

often accidental transection—probably in that 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 general.

Speak of impotency of moring will in most cases

especially of Transections.

[Relate story of Gettysburg Wisconsin soldier]
All deaths of (unintentional but little attention death in battle) may be various influenced by the nature of missile

Deaths from Exsanguination or (Asphyxia usually death upon one side, the head

Prudential. Here, continuous Hemorrhage allowed on one arm, the limbs and lose part

Where Hemorrhage has been great, the body is weary white, the face very pallid

But still lie - The lips thin

Death from Respiration

Body mostly upon back, the face turning up.

Body, the arms dropped by the side,

Death from the 

Body occurs as an accident from premature

Discharge, either of Salutary, or hurts a stroke from

Body seems to sink to the earth, a ghastly

Death, when

When the projectile is at full flight

The body is started violently a considerable

distance - Thus a man shot may be thrown 15 or 20 feet

Death from Wounds

or Wounds at the point of Neck.

Respiration - The body frequently lies prone upon its face

the belly, the arms extended. The hands clenched

grasping the lower, or soil, a dirt.

Death from (The body has usually stretched or spring the forward

Head wound

Instantaneous Death
Instantaneous, it occasionally happens, that in death occurring instantly, and directly on the receipt of an injury, especially of the head, the position assumed by the body are the entire — the attitude preserved being those of the last moment of life.

Thus I have seen the body of a soldier lying unsupported on the ground, grasping the barrel of a gun, the stock of which had dropped to the ground.

At Antietam, I saw another soldier of middle age, one I
whose feet rested on the ground, and one knee against the bank of the road — the right hand stretched forward against the low bank, word of fire
balls in front of him — for he had been killed instantly when rising to his feet, and leaning forwards, in defense of the Southern road, close by that famous field of corn.

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

At Antietam, 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 that last moment of life — a peaceful smile was on his face.

At flour at Williamsburg, the dead body of a man, who had been shot directly through the forehead, as was cheering
over a low fence—his leg, was the last attitude of life—the leg half over the fence, the trunk crouched backward as it were. The coronal hand was raised to the level of the forehead, at which its palmar surface turned forward, as if to ward off a coming fall.

I have frequently seen dead bodies of men who had fallen with their muzzles on ground, pointing forward. I carried as if on an acorn nuclear change.

I have two more than once seen a body with knee under circumstances when I had not time to dismount and examine into particular.
University of Pennsylvania,
Philadelphia, November 20 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 brakeman on the cars 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 singing in the vicinity of Gettysburg, Pa., they suddenly came upon a squad of rebel cavalry dismounted. The rebels immediately made for their horses. Toiling was fast at them apparently without effect as they all rode away, with one exception, and he was standing with one foot in the stirrup, one hand on the left shoulder, and one hand grasping the bridle rein, and with his horse, the right hand grasping his carbine near the muzzle, the butt resting on the ground, his head turned over his right shoulder, seemingly watching the approach of his enemies. Some of the parties wished to give him the benefit of a second volley. The first volley was fired at the distance of two hundred (200) yards but was restrained by the order in command—bent on driving the party to bring their arms to a steady advance and take them alive—while the mean time the 'lads' 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 rigid in death, in this singular condition his attitude, as described. The utmost difficulty was had in endeavoring to wrench his hands loose from the mane of his horse, and his carbine from his right hand, and after he was laid upon the ground his 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 apparent exit—the other entering the body on the right side of the spine, coming out as was supposed at the time, near the region of the heart, including the sacral vertebra, had dropped upon the ground. The horse had remained quiet—unless I am wrong, which I am not. Here was no medicum present. I am aware of this, but I can only give you the facts as I saw them and understood them at the time.

J. A. Bustowett.

This took place in the spring of 1865. The Union soldiers were a detachment of Sherman's army, the 'lads' belonging to the rebel General Wade Hampton's command, as citizens informed me.

A. J. Bystowet.
Read Torrance, who had been shot directly over the front, so he was obliged to lie on a low place. The leg remained in the last attitude of life. The leg half on the face. At first, it remained back toward, as it was. The head was raised to the level of the hand, but it was more forward so as to ward off a coming evil.

I have frequently met men from the same year, who had killed them. I believe, to the great, pressing forward, I carried a 7.5. I have him more than once been taken, and killed. I called him to guide me. The man who had not turned to the one who was/now.

To come after 19 of [correction]

Large notes

The position, repulsions, and confusion to the

Home at

Antietam

Since the notes on the previous page were collected 14th & 15th of the

Appeared upon to Mr. Glenn's report of the Med and

Semi of the 7th, 5th, 4th, Army, 30th, 4th, 4th, 4th,
hand, as in the case absolutely Dr. Reed, and I to
wield off a blow. In the case, that is, of an 
Aggressive 
Assassin, killed at the same moment as his horse, the 
boy 
Blind at the right side almost to the point, the 
Rabid 
Came forward to be the portion of a Charging 
Cavalryman.

In the majority of cases, the 
failed to
be
Above opened by myself & others, the wound came in 
the head, entered directly through the forehead.

I have known the same phenomenon to 
fall
The to the instant when the bullet had passed 
through the heart, and the bullet came as repeated 
by the Fourth Officer, attended to.

Rey on 4

Bemart

I have written this briefly, as the result of 

Wounds which must from their nature have 
been mortally mortal. I should have noted 
here that I have known from 70000 to a 

portion of the crowd.

The 

Bemart

Mr. Mitchell's case

Dear Sir,

I write this, Great-Step-Cousin, I am under a 

Repossession, I am writing to Mr. Howard.

He was away, when I came to it, the last 

X.

If life, then though that for a while on the face of the Earth

Mr. Howard, I have been to the same. I have sometimes

written that I could fancy an expression of surprise,

Wonders of progress & hatred too. This I have 

nothing

I have heard them & only to these being what

of
Laid the story was a foxed banana, a fox from Mexico.

In attempting to tell how the interaction came to be that of the fox and the banana, I found that there were three conditions I had but little to circulate—

The same phenomena have occasionally been observed a death from apoplexy, the remnant of one of them; I shall report

by Dr. H. H. of a lady named Furman who was

with the last of the trip in their return from the

Vandament. It has been related, the length of the body by

by the feet and head, of

- [Quoted Carpenter? 1.333

at Edinburgh June 1835

MRS. Reid's body was found dead. In a sitting

position a part of her bed, leaving her head erect

MR. Reid

Cave

Wax on a table placed in the middle of the room where

- In a contrary case, the brow of one portion of the body

was regarded as having some other portions on the

the case of MRS. Reid, such a view to point to the

fact that the first the man in the table

had forced the body into this backward position, after

Lorimer, on June 1835.

What if

There are questions—Difficult to answer—

Not at all, probably of the nature of cadaver.

Rigor, rigor, in the latter does not appear

until a certain time after death; my own, 7 to

20 hours, where, the rigor to question in the

accompaniment of death—Dr. Lorimer.
The physiology regards this rigor, a contraction of the tone of the motor nerve, which ceases after a few hours, and is then succeeded by a state of flaccidity, after which the rigor is said to recur. This is not questioned by many, and is generally termed rigor mortis. The duration of this rigor mortis after a few hours is stated by Dr. Carpenter to extend seven or eight days. I have myself examined it in cases in which the body had been dead at least 24 hours, if not more, at the time of the death, and by M. Rey at the clinic, and by M. Pérez at the allana, about 57 days after death. After death of Mânca observed by M. Armand at Madrid, 24 hours after death.

I cannot think that officers could examine the body immediately at the time, but Rigor mortis is not usual, and all cases of death are usually examined after several days.

But from a careful consideration of all that I have been saying on this subject, I am inclined to believe that it is a state that develops at the moment of death in the body.

1. That the immediate attitude exhibited are those of the last moment of life.
2. That death has been unavoidable, or accompanied by conscious motion.
3. That death has been involuntary, or accompanied by voluntary motion.
4. That it is followed by paralysis and rigor.
5. That it is followed by relaxation, either immediately or after several hours.

My dear Quinlin, I am very much interested in your questions on the subject.

Chesterfield Rigor
M. Rigor de Verneuil, 23
Morn'd, I'll not load God in living a dead
human form. Even when my heart cry
with awit them — despite
Quot: Thomas Campbell, i (chick's warning)
here, the Wizard's lord but East to Clan
Cameron, at the coming Calwodd
Temples.
And their half-seen trysts are tired to the plains

Quot my own observation on genomic
Human Experience
County map & Brigade & Tennessee