
Contents

Foreword

Acknowledgments

Editor's Note

1 Firearms and Ammunition

Small Arms

Handguns

Rifles

Assault Rifles

Shotguns

Submachine Guns

Caliber Nomenclature for Rifled Weapons

Ammunition

Cartridge Cases

Head Stamps

Primers

Propellants

Bullets

Caseless Ammunition

Flint and Percussion Weapons

References

2 The Forensic Aspects of Ballistics

Class and Individual Characteristics of Bullets

Comparison of Bullets

Cartridge Cases

Base Markings

Cytology on Bullets and Clothing

DNA Typing of Tissue on Bullets

Fingerprints

Black Powder Firearms

Discharge of a Weapon

References

3 Wound Ballistics

- Loss of Kinetic Energy
- References

4 An Introduction to the Classification of Gunshot Wounds

- Contact Wounds
- Near-Contact Wounds
- Intermediate-Range Wounds
 - Cylinder Gap
 - Silencers
 - Muzzle Brakes/Compensators
 - Flash Suppressors
 - Gas Ports/Vents
 - Miscellaneous Powder Patterns
- Distant Gunshot Wounds
- Entrance Versus Exit Wounds
 - Entrance Wounds
 - Exit Wounds
 - Miscellaneous Entrance Wounds
- Intermediary Targets
- Stippling Powder Tattooing and Pseudo-Powder Tattooing
- Pseudo-Soot
- Ricochet Bullets
- Bone
- Bullet Wounds of the Skull
- Caliber Determination from Entrance Wounds
- Bullet Wipe
- Backspatter
- References

5 Wounds Due to Handguns

- Contact Wounds
 - Contact Wounds over Bone
- Near-Contact Wounds
 - Hair
 - Gas Injuries
- Intermediate-Range Wounds
- Cylinder Gap
- Distant Wounds

Addendum: Centerfire Handgun Cartridges

- .25 ACP (0.35 × 16)
- .32 ACP (7.65 × 17SR)
- .32 Smith & Wesson and .32 Smith & Wesson Long
- .38 Smith & Wesson (9 × 20R)
- .38 Special
- .357 Magnum
- .380 ACP (9 × 19 mm/9-mm Kurtz/9-mm Corto/
9-mm Browning Short)
- 9 × 18-mm Makarov
- .38 Colt Super Auto (9 × 23R)
- 9-mm Luger (9-mm Parabellum / 9 × 19-mm)
- .40 Smith and Wesson
- .45 ACP (11.43 × 23)
- .44 Smith & Wesson Magnum

References

6 Wounds from .22 Caliber Rimfire Weapons

- .22 Magnum
- .22 Short, Long, and Long Rifle Cartridges
 - .22 Short Cartridge
 - .22 Long Ammunition
 - .22 Long Rifle Ammunition
- Shot Cartridges
- Hyper-Velocity .22's
- BB and CB Caps
- Frangible Rimfire Ammunition
- CCI Rimfire Ammunition
 - Wounds Due to Rimfire Ammunition
 - Contact Wounds
 - Intermediate-Range Wounds
 - Distant Wounds

References

7 Wounds from Centerfire Rifles

- Centerfire Rifle Bullets
- Centerfire Rifle Wounds
- Powder Tattooing
- X-rays
- Perforating Tendency of Centerfire Rifle Bullets

- Intermediary Targets
 - Soot-like Residues
- Assault Rifles
- Military Ammunition Converted to Sporting Ammunition
- Plastic Wads in Rifle Bullets
- Addendum: Rifle Calibers
 - .223 Remington (5.56×45 mm)
 - 5.45×39
 - .243 Winchester (6.16×51 mm)
 - .270 Winchester
 - 7-mm Magnum
 - 7.62×39
 - 30 M-1 Carbine (7.62×33 mm)
 - .30-30 Winchester
 - .30-06 Springfield (7.62×63 mm)
 - .308 Winchester (7.62×51 mm)
 - $7.62 \times 54R$ (7.62-mm Mosin-Nagant)
- References

8 Wounds from Shotguns

- Shotgun Ammunition
- Shot
- Birdshot
- Buckshot Ammunition
- Shotgun Slugs
 - Wounds Due to Slugs
- Wound Ballistics of the Shotgun
- Shotgun Wounds
 - Contact Wounds of the Head
 - Intermediate and Close-Range Wounds of the Head
 - Contact Wounds of the Trunk
 - Intermediate Range Wounds of the Body
 - Distant Wounds
- Wounds from Buckshot
 - Pellet Holes in Window Screens
- Sawed-Off Shotguns
 - Shotgun Diversifiers
 - Automatic Ejection of Fired Hulls
- Miscellaneous Notes on Shotgun Shell
- Miscellaneous Shotgun Ammunition
- References

9 Bloody Bodies and Bloody Scenes

- Physical Activity Following Gunshot Wounds
- Wounds Seen in the Emergency Room
- Minimal Velocities Necessary to Perforate Skin
- Bullet Emboli
- Gunshot Wounds of the Brain
 - Bone Chips
 - Secondary Fractures of the Skull
 - Shape of the Bullet Tracks
 - Point of Lodgement of the Bullet
- Intrauterine Gunshot Wounds
- Lead Poisoning from Retained Bullets
- Location of Fatal Gunshot Wounds
- Behavior of Ammunition and Gunpowder in Fires
- Blunt-Force Injuries from Firearms
- Multiple Gunshot Wounds Through One Entrance
- Falling Bullets
- Reaction-Response Times in Handgun Shootings
- References

10 Miscellaneous Weapons and Ammunition

- Air Weapons
- Zip Guns
- Stud Guns
- Captive Bolt Devices (Pistols)
- Bang Sticks
- Synthetic Discharge of Rifle Firearms
- Bullets without Rifling Marks
- Elongated Bullets
- Cast Bullets
- Sabot Ammunition
- Tandem Bullets
- New Forms of Handgun Ammunition
 - Hollow-Point Design
 - Miscellaneous Bullet Design
- Ammunition Intended for Use In Indoor Ranges
- NYCLAD® Revolver Cartridges
- Frangible Bullets
- "Armor-Piercing" Handgun Ammunition: KTW and Its Legacy
- Handgun Shot Cartridges

- Plastic Training Ammunition
- Flechettes
- Rubber and Plastic Bullets
- Blank Cartridge Injuries
- Electrical Guns
- Interchangeability of Ammunition in Weapons
- Markings and Foreign Material on Bullets
- Effect of Environmental Temperature on Bullet Velocity
- References

11 X-rays

- References

12 Detection of Gunshot Residues

- Methods of Analyzing Gunshot Residues
 - Flameless Atomic Absorption Spectrometry (FAAS)
 - Scanning Microscope-Energy Dispersive X-ray Spectrometry (SEM-EDX)
 - Trace Metal Detection Technique (TMDT)
- Gunshot Wounds Through Clothing
- Analytical Examination of Clothing for Range Determination
 - The Modified Greiss Test
 - The Sodium Rhodizonate Test
- EDX for Examination of Clothes
- Range Determination in Decomposed Bodies
- Addendum
- References

13 Correct Handling of Deaths from Firearms

- The Autopsy Report

14 Suicide by Firearms

- Suicides due to Handguns
- Suicides Due to Long Arms
- Suicides in General
- Movement of Firearms at the Scene
- Guns Found in the Hand

Backpatter (Blowback) on the Hands of Shooters
in Cases of Suicide
Backpatter (Blowback) on Weapons in Cases
of Contact Wounds
"Russian Roulette"
Accidental Deaths from Firearms
Rifles and Shotguns
Slam-Fires
References

Appendix A "Stopping Power" and Hollow-Point
Pistol Ammunition: Myths and Facts

Appendix B The Forensic Autopsy in Gunshot
Wound Cases