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8 IN THE UNITED STATES DISTRICT COURT
9 FOR THE SOUTHERN DISTRICT OF CALIFORNIA

10 VIRGINIA DUNCAN, et al.,

11 Plaintiffs,

12 v.

13 XAVIER BECERRA, in his official
14 capacity as Attorney General of the State
of California,

15 Defendant.

Case No: 17-cv-1017-BEN-JLB

**EXHIBITS 6-9 TO THE
DECLARATION OF ANNA M.
BARVIR IN SUPPORT OF
PLAINTIFFS' MOTION FOR
SUMMARY JUDGMENT OR,
ALTERNATIVELY, PARTIAL
SUMMARY JUDGMENT**

Hearing Date: April 30, 2018
Hearing Time: 10:30 a.m.
Judge: Hon. Roger T. Benitez
Courtroom: 5A

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EXHIBIT 6

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15 **VIRGINIA DUNCAN, et al.,**

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17-cv-1017-BEN-JLB

EXPERT REBUTTAL REPORT
OF JOHN J. DONOHUE

Judge: Hon. Roger T. Benitez
Action Filed: May 17, 2017

28 EXPERT REBUTTAL REPORT OF JOHN J. DONOHUE (17-cv-1017-BEN-JLB)

Expert Rebuttal Report of John J. Donohue

Duncan v. Becerra, United States District Court (S.D. Cal.),
Case No.: 17CV1017 BEN JLB
November 2, 2017

BACKGROUND AND QUALIFICATIONS

1. I, John J. Donohue, am the C. Wendell and Edith M. Carlsmith Professor of Law at Stanford Law School. After earning a law degree from Harvard and a Ph.D. in economics from Yale, I have been a member of the legal academy since 1986. I have previously held tenured positions as a chaired professor at both Yale Law School and Northwestern Law School. I have also been a visiting professor at a number of prominent law schools, including Harvard, Yale, the University of Chicago, Cornell, the University of Virginia, Oxford, Toei University (Tokyo), St. Gallen (Switzerland), and Renmin University (Beijing).
2. For a number of years, I have been teaching a course at Stanford on empirical law and economics issues involving crime and criminal justice, and I have previously taught similar courses at Yale Law School, Tel Aviv University Law School, the Gerzensee Study Center in Switzerland, and St. Gallen University School of Law in Switzerland. I have consistently taught courses on law and statistics for two decades.
3. I am a Research Associate of the National Bureau of Economic Research and a member of the American Academy of Arts and Sciences. I was a Fellow at the Center for Advanced Studies in Behavioral Sciences in 2000-01, and served as the co-editor (handling empirical articles) of the *American Law and Economics Review* for six years. I have also served as the President of the American Law and Economics Association and as Co-President of the Society of Empirical Legal Studies.
4. I am also a member of the Committee on Law and Justice of the National Research Council ("NRC"), which "reviews, synthesizes, and proposes research related to crime,

law enforcement, and the administration of justice, and provides an intellectual resource for federal agencies and private groups.”¹

5. My research and writing uses empirical analysis to determine the impact of law and public policy in a wide range of areas, and I have written extensively about the relationship between rates of violent crime and firearms regulation. My complete credentials and list of publications are stated in my curriculum vitae, a true and correct copy of which is attached as Exhibit A.
6. The following lists all of the cases in which I have testified as an expert in the past 4 years. I filed an expert declaration in each of two cases involving a National Rifle Association (“NRA”) challenge to city restrictions on the possession of large-capacity magazines:

Fyock v. City of Sunnyvale, United States District Court (N.D. Cal.), Case No. 4:13-cv-05807-PJH, January 2014.

San Francisco Veteran Police Officers Association v. City and County of San Francisco, United States District Court (N.D. Cal.), Case No. C 13-05351 WHA, January 2014.

7. I also filed an expert declaration in a case involving a challenge by the NRA to Maryland’s restrictions on assault weapons and large-capacity magazines:

Tardy v. O’Malley (currently listed as *Kolbe v. Hogan*), United States District Court (District of Maryland), Case 1:13-cv-02841-CCB, February 2014.

In all these cases, the relevant gun regulations have (ultimately) been sustained in the relevant federal appellate courts.

8. In addition to filing an earlier expert declaration in this case, I also filed (on June 1, 2017) an expert declaration in a case involving a challenge by the NRA to California’s restrictions on carrying of weapons in public:

Flanagan v. Becerra, United States District Court (C.D. Cal.), Case No. 2:16-cv-06164-JAK-AS.

9. I am being compensated at my government rate of \$425 per hour.

¹ See <http://www7.national-academies.org/claj/> online for more information about the NRC.

SUBSTANTIVE CONCLUSIONS

10. The events in Las Vegas on October 1, 2017, have underscored—yet again—the wisdom of the efforts of the California legislature, with the overwhelming support of the voters of the state, “to aid in the shaping and application of those wise restraints that make men free” by banning from our state the large-capacity magazines (LCMs)² that were a key element enabling the extent of the carnage in that horrific mass shooting.³ It is my opinion that if, rather than allowing the federal ban on these devices to lapse in 2004, the country had moved to the more complete ban that California has finally adopted, tragedies like the one in Las Vegas would have been far less deadly and damaging to countless individuals who have been maimed and injured throughout the United States and perhaps the world.⁴ It is also my opinion that Section 32310’s ban on possession of LCMs would decrease the mayhem from at least some mass killings in California, by making it incrementally harder for those bent on mass destruction to implement their criminal designs.

Response to Curcuruto Report

11. In opposition to the ban on LCMs, plaintiffs offer two additional expert reports. The first report is from James Curcuruto of the National Shooting Sports Foundation.
12. Mr. Curcuruto provides irrelevant information, opining as his main conclusion that “There are at least one hundred million magazines of a capacity of more than ten rounds in possession of American citizens” (Curcuruto Report at 3), only to concede later that he really does not know but “it is safe to say whatever the actual number of such magazines

² LCMs are defined as ammunition-feeding devices with the capacity to hold more than 10 rounds of ammunition.

³ The quote is from John MacArthur Maguire and is enshrined at the Harvard Law School library. See <https://asklib.law.harvard.edu/friendly.php?slug=faq/115309> (last visited Nov. 1, 2017).

⁴ The horrendous mass killing in Norway by Anders Breivik, endangered by the restrictive gun laws of Europe, was salvaged by his ability to procure ten 30-round high-capacity magazines from the United States. Stephanie Condon, “Norway Massacre Spurs Call for New U.S. Gun Laws,” CBS News, July 28, 2011, *available at* <https://www.cbsnews.com/news/norway-massacre-spurs-calls-for-new-us-gun-laws/> (last visited Nov. 1, 2017).

in United States consumers' hands is, it is in the tens-of-millions." (Curcuruto Report at 4.)

13. While Mr. Curcuruto offers his wildly varying estimates of the number of high-capacity magazines in the United States, his undifferentiated national speculations offer no insight into how many of these magazines are possessed in rural areas throughout the United States. As a result, his figures would have little relevance to the appropriate regulatory regime for a state with large urban population centers like California. Mr. Curcuruto does not discuss the stock of high-capacity magazines in California, which of course will be far lower on a per capita basis because it has been unlawful to add to this stock for decades.

14. National surveys such as the General Social Survey (GSS) and research by the Pew Research Center and the National Behavioral Risk Factor Surveillance System consistently find a persistent decline in household gun ownership over the past several decades. A March 2013 report from the Pew Research Center states:

The Pew Research Center has tracked gun ownership since 1993, and our surveys largely confirm the General Social Survey trend. In our December 1993 survey, 45% reported having a gun in their household; in early 1994, the GSS found 44% saying they had a gun in their home. A January 2013 Pew Research Center survey found 33% saying they had a gun, rifle or pistol in their home, as did 34% in the 2012 wave of the General Social Survey.⁵

15. Because this reliable social science data shows that the number of households that own guns has likely dropped in recent decades, and certainly has not grown, the robust gun sales in recent years cannot be attributed to increasingly broad gun ownership. Instead, these sales predominantly represent purchases of guns by members of households that previously owned guns, as well as purchases in anticipation that certain gun bans will be enacted with grandfather clauses that will generate profits from the higher prices that follow when the supply of certain weapons or LCMs is restricted.

⁵ Pew Research Center, *Why Own a Gun? Protection is Now Top Reason*, Section 3: Gun Ownership Trends and Demographics, March 12, 2013, available at <http://www.people-press.org/2013/03/12/section-3-gun-ownership-trends-and-demographics> (last visited on November 2, 2017).

16. I am not aware of any current social science research providing an estimate for the number of American households that own LCMs or for the number of LCMs in private hands in America. It is reasonable to assume, however, that consumer demand for LCMs is similar to demand for firearms generally.
17. If that is the case, then LCM ownership by household is also likely to be concentrated, with increased numbers of LCMs held by a declining share of households. This would be consistent with a January 2013 New York Times/CBS News nationwide poll of 1,110 adults showing that nearly two-thirds of Americans favored a ban on LCMs.⁶ This is roughly the percentage of California voters who cast their ballots to rid the state of these devices.
18. Thus, Mr. Curcuruto's unsubstantiated claims about the number of LCMs in private hands should not be confused with broad possession across America, but merely proliferation in the hands of a stable or dwindling number of households. Indeed, plaintiff's other expert, Stephen Helsley, makes this point when he states: "My associates who have such pistols [that accept LCMs] also have a considerable number of spare magazines for them. In my case, I have one 19-round and eight 17-round magazines for my Glock." (Helsley Report at 5.)
19. Moreover, it is unclear what relevance the stock of high-capacity magazines could make to determinations about what can be lawfully banned. Had the federal ban on these magazines not been lifted in 2004, the stock would have been dramatically lower than it is today, and since the 1994 federal ban was lawful, efforts by the gun industry to flood the market with these magazines in its wake can hardly be thought to deprive state governments of the ability to regulate in ways that were available to them prior to 1994.

Response to Helsley Report

⁶ Jennifer Steinhauer, *Pro-Gun Lawmakers Are Open to Limits on Size of Magazines*, N.Y. Times, Feb. 18, 2013, available at http://www.nytimes.com/2013/02/19/us/politics/lawmakers-look-at-ban-on-high-capacity-gun-magazines.html?_r=1& (last visited November 2, 2017).

20. The second expert report submitted for the plaintiffs is from Stephen Helsley. Noting that for the past 24 years, he was a state liaison for and then consultant to the National Rifle Association, Helsley states that soldiers during war and “on duty, uniformed police officers” often use guns equipped with high-capacity magazines. Without acknowledging that the risks faced by soldiers and police are vastly different from those faced by civilians, Helsley then states the following:

The home-owner and the concealed weapon permit holder want a pistol that can hold significantly more cartridges than a revolver for the same reason a law enforcement officer or soldier wants one—to increase his or her chances of staying alive. For virtuous citizens buy their guns to protect themselves from the same criminals that police carry guns to protect the citizens, the public, and themselves. (Helsley Report at 5).

21. But private individuals have completely different needs than police officers. The former only need to scare off criminals (or hold them off until the police arrive). The police need to effectuate arrests. Thus, while having the criminal run away is a desired outcome for the average citizen, this is a bad outcome for a police officer, which is why an extended gun battle is extremely rare for law-abiding citizens and far more common for the police. Accordingly, Helsley’s effort to look to officer-involved shootings to make judgments about the needs of average citizens widely misses the mark. (Helsley Report at 7).

22. In opposing the ban on high-capacity magazines, Helsley’s claims that “Gunfights frequently involve a lot of ‘missing.’” (Helsley Report at 7.) He then combines that with the fact that the average citizen is not well-trained and is under stress when threatened to argue that more bullets should be sprayed by law-abiding citizens because some of their bullets will likely hit “barriers such as vehicles or walls.” (Helsley Report at 7.) But all of these factors actually provide strong support for a ban on LCMs rather than an argument against such a ban. Helsley doesn’t consider that bullets fired by a modern weapon with an LCM will easily penetrate walls, threatening family members or occupants in attached dwellings. This point was dramatically underscored when a hapless concealed carry permit holder attending a gun safety class inadvertently fired his weapon, which discharged a bullet that easily penetrated the classroom wall, striking and

killing the owner of the gun store who was working in the next room.⁷ Encouraging untrained, stressed individuals to spray bullets from a high-capacity magazine is a recipe for generating similar unwelcome outcomes that will put family members and neighbors at considerable risk.

23. If high-capacity magazines had been completely barred from the civilian market, many lives would have been saved as the destructive capacity of mass shooters would have been appropriately restricted. The *New York Times* video of the recent Las Vegas shooting shows how the Las Vegas concert attendees would use the pauses in firing when the shooter's high-capacity magazines were spent to flee the deadly venue before more shots were fired.⁸ If Stephen Paddock had been limited to using only 10-round magazines during his deadly rampage, potentially hundreds of victims at the concert could have been spared.

24. A prescient December 2016 editorial in the *Las Vegas Sun* noted the danger presented—and the lack of practical use for—LCMs:

By overwhelmingly supporting universal background checks for firearms purchases, Clark County voters made it abundantly clear last month that they were concerned about gun violence.

Now, it's time for Las Vegas-area lawmakers to go a step further to protect Nevadans and push to ban the sale of high-capacity magazines in the state.

⁷ Peter Holley, *Ohio gun store owner accidentally killed by student during firearm-safety class*, *Washington Post*, June 19, 2016, available at https://www.washingtonpost.com/news/morning-mix/wp/2016/06/19/ohio-gun-store-owner-accidentally-killed-by-student-during-firearm-safety-class/?utm_term=.ed4c232d20ad (last visited Nov. 1, 2017).

Another example of how doors and walls do not stop bullets from modern handguns occurred on September 13, 2015, when “39-year-old Mike Lee Dickey was babysitting an 8-year-old Casa Grande, Arizona boy. According to police, at about 2 a.m., Dickey was in the bathroom removing his .45-caliber handgun from the waistband of his pants when he unintentionally discharged the gun. The bullet passed through two doors and struck the 8-year-old in his arm while he lay sleeping in a nearby bedroom. The boy was flown to a hospital in Phoenix for treatment.” *8-year-old boy unintentionally shot by babysitter*, Ohh Shoot, Sept. 13, 2016, available at <http://ohhshoot.blogspot.com/2015/09/8-year-old-boy-unintentionally-shot-by.html> (last visited Nov. 1, 2017).

⁸ Malachy Browne, et al., *10 Minutes. 12 Gunfire Bursts. 30 Videos. Mapping the Las Vegas Massacre*, N.Y. TimesVideo, Oct. 21, 2017, available at <https://www.nytimes.com/video/us/100000005473328/las-vegas-shooting-timeline-12-bursts.html> (last visited Nov. 1, 2017).

Eight states and the District of Columbia already have imposed such prohibitions, and with good reason. There's simply no legitimate civilian use for magazines that hold dozens upon dozens of rounds of ammunition.

Don't believe us? Fine, then listen to Clark County Sheriff Joe Lombardo.

"I'm a very avid hunter, I was in the military myself, and there's no need to have a high-capacity magazine for any practical reason," Lombardo said during a recent interview with the Sun.

To the contrary, the dangers posed by such magazines are obvious. Lombardo says the time it takes for suspects to change magazines gives potential victims an opportunity to escape and law enforcement officials an opportunity to safely fire back. That being the case, the fewer times a shooter has to switch out magazines, the fewer the chances for people to get away and authorities to get a protected shot.⁹

25. Sheriff Lombardo's views were similarly endorsed in the testimony of United States Attorney (District of Colorado) John Walsh before the Senate Judiciary Committee on February 27, 2013, in which he noted:

From the point of view of most law enforcement professionals, a perspective I share as a long-time federal prosecutor and sitting United States Attorney, shutting off the flow of military-style assault weapons and high-capacity magazines is a top public safety priority. [...]

One of the most disturbing aspects of the recent mass shootings our Nation has endured is the ability of a shooter to inflict massive numbers of fatalities in a matter of minutes due to the use of high-capacity magazines. High-capacity magazines were defined in the 1994 ban as magazines capable of holding more than 10 rounds, and this is a definition the Department endorses. The devastating impact of such magazines is not limited to their use in military-style assault rifles; they have also been used with horrific results in recent mass shootings involving handguns. The 2007 mass shooting at Virginia Tech involved a shooter using handguns with high-capacity magazines. Similarly, recent mass shootings in Tucson, Arizona; Oak Creek, Wisconsin; and Fort Hood, Texas all involved handguns with magazines holding more than 10 rounds. As evidenced by these events, a high capacity magazine can turn any weapon into a tool of mass violence. Forcing an individual bent on inflicting large numbers of casualties to stop and reload creates the opportunity to reduce the possible death toll in two ways: first, by affording a chance for law enforcement or bystanders to intervene during a pause to reload; and second, by giving bystanders and potential victims an opportunity to seek cover or escape when there is an interruption in the firing.

⁹ *High-capacity magazine ban a must for Nevadans' safety*, Las Vegas Sun, Dec. 11, 2016, available at <https://lasvegassun.com/news/2016/dec/11/high-capacity-magazine-ban-a-must-for-nevadans-saf/> (last visited Nov. 1, 2017).

This is not just theoretical: In the mass shooting in Tucson, for example, 9-year old Christina-Taylor Green was killed by the 13th shot from a 30-round high-capacity magazine. The shooter was later subdued as he was trying to reload his handgun after those 30 shots. The outcome might have been different if the perpetrator had been forced to reload after firing only 10 times.

Furthermore, high-capacity magazines are not required for defending one's home or deterring further action by a criminal. The majority of shootings in self-defense occur at close range, within a distance of three yards. In such a scenario, and at such close ranges, a 10-round magazine is sufficient to subdue a criminal or potential assailant. Nor are high-capacity magazines required for hunting or sport shooting. Like military-style assault weapons, high-capacity magazines should be reserved for war, and for law enforcement officers protecting the public. The continued commercial sale of high-capacity magazines serves only to provide those determined to produce a high body count with the opportunity and the means to inflict maximum damage. Indeed, there is evidence suggesting that when the previous ban was in effect, it reduced the number of high-capacity magazines seized by the police, as well as the lethality of incidents.¹⁰[The citation is from Walsh's statement.]¹¹

Respectfully submitted,



¹⁰ See, David S. Fallis and James V. Grimaldi, *In Virginia, high-yield clip seizures rise*, Washington Post, Jan. 23, 2011, available at <http://www.washingtonpost.com/wp-dyn/content/article/2011/01/22/AR2011012204046.html> (last visited Nov. 1, 2017).

¹¹ Statement of John F. Walsh before the United States Senate Committee on the Judiciary, <https://www.judiciary.senate.gov/imo/media/doc/2-27-13WalshTestimony.pdf> (last visited Nov. 1, 2017).

Exhibit A

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EMPLOYMENT

Full-time Positions

- Stanford Law School, C. Wendell and Edith M. Carlsmith Professor of Law, September 2010 to the present.
- Yale Law School, Leighton Homer Surbeck Professor of Law, July 2004 to August 2010.
- Stanford Law School, Professor of Law, September 1995 to June 2004.
 - William H. Neukom Professor of Law, February 2002 – June 2004.
 - John A. Wilson Distinguished Faculty Scholar, March 1997 – January 2002.
 - Academic Associate Dean for Research, since July 2001 – July 2003.
 - Stanford University Fellow, September 2001 – May 2003.
- Northwestern University School of Law:
 - Class of 1967 James B. Haddad Professor of Law, September 1994-August 1995
 - Harry B. Reese Teaching Professor, 1994-1995
 - Professor of Law, May 1991-September 1994
 - Associate Professor, May 1989-May 1991
 - Assistant Professor, September 1986-May 1989.
- Research Fellow, American Bar Foundation, September 1986-August 1995.
- Associate Attorney, Covington & Burling, Washington, D.C., October 1978-July 1981 (including last six months as Attorney, Neighborhood Legal Services)
- Law Clerk to Chief Justice T. Emmet Clarie, U.S. District Court, Hartford, Connecticut, September 1977-August 1978.

Temporary Appointments

- Visiting Professor, Bocconi University, Milan, Italy, October- November 2012, April 2014, and June 2015.
- 2011 Faculty Scholar in Residence, University of Denver Sturm College of Law, April 21-22, 2011.
- Visiting Fellow, The Milton Friedman Institute for Research in Economics, University of Chicago, October 2009
- Schmidheiny Visiting Professor of Law and Economics, St. Gallen University, November – December, 2007.
- Visiting Lecturer in Law and Economics, Gerzensee Study Center, Switzerland, June 2007.
- Visiting Professor, Tel Aviv University School of Law, May 2007.
- Herbert Smith Visitor to the Law Faculty, University of Cambridge, England, February 2006.
- Visiting Professor, Harvard Law School, January 2003.

- Fellow, Center for Advanced Studies in the Behavioral Sciences, Stanford, California, Academic year 2000-01.
- Visiting Professor, Yale Law School, Fall, 1999.
- Professor, Center for the Study of American Law in China, Renmin University Law School, Beijing, July 1998.
- Visiting Professor of Law and Economics, University of Virginia, January 1997.
- Lecturer, Tooin University School of Law, Yokohama, Japan, May-June 1996.
- Cornell Law School, Distinguished Visiting Fellow in Law and Economics, April 8-12, 1996 and September 25-29, 2000
- Visiting Professor, University of Chicago Law School, January 1992-June 1992.
- Visiting Professor of Law and Economics, University of Virginia Law School, January 1990-May 1990.
- Fellow, Yale Law School Program in Civil Liability, July 1985-August 1986.
- Private Practice (part-time), New Haven, Connecticut, September 1981-August 1986.
- Instructor in Economics, Yale College, September 1983-August 1985.
- Summer Associate, Donovan Leisure Newton & Irvine, New York, Summer 1982.
- Summer Associate, Perkins, Coie, Stone, Olsen & Williams, Seattle, Washington, Summer 1976.
- Research Assistant, Prof. Laurence Lynn, Kennedy School of Government, Harvard University, Summer 1975.
- LSAT Tutor, Stanley Kaplan Education Center, Boston, Massachusetts; Research Assistant, Prof. Philip Heymann, Harvard Law School; Research Assistant, Prof. Gordon Chase, Harvard School of Public Health. (During Law School).

EDUCATION

Yale University, 1981-1986

- University Fellow in Economics; M.A. 1982, M. Phil. 1984, Ph.D. 1986.
 - Dissertation: "A Continuous-Time Stochastic Model of Job Mobility: A Comparison of Male-Female Hazard Rates of Young Workers." Awarded with Distinction by Yale.
 - Winner of the Michael E. Borus Award for best social science dissertation in the last three years making substantial use of the National Longitudinal Surveys--awarded by the Center for Human Research at Ohio State University on October 24, 1988.
- National Research Service Award, National Institute of Health.
- Member, Graduate Executive Committee; Graduate Affiliate, Jonathan Edwards College.

Harvard Law School, 1974-1977 (J.D.)

- Graduated Cum Laude.
- Activities: Law Clerk (Volunteer) for Judge John Forte, Appellate Division of the District Court of Central Middlesex; Civil Rights, Civil Liberties Law Review; Intra-mural Athletics; Clinical Placement (Third Year): (a) First Semester: Massachusetts Advocacy Center; (b) Second Semester: Massachusetts Attorney General's Office--Civil Rights and Consumer Protection Divisions. Drafted comments for the Massachusetts Attorney General on the proposed U.S. Department of Justice settlement of its case against Bechtel Corporation's adherence to the Arab Boycott of Israeli companies.

Hamilton College, 1970-1974 (B.A.)

- Departmental Honors in both Economics and Mathematics
 - Phi Beta Kappa (Junior Year)
- Graduated fourth in class with the following academic awards:
 - Brockway Prize
 - Edwin Huntington Memorial Mathematical Scholarship
 - Fayerweather Prize Scholarship
 - Oren Root Prize Scholarship in Mathematics
- President, Root-Jessup Public Affairs Council.

PUBLICATIONS

Books and Edited Volumes:

- Law and Economics of Discrimination, Edward Elgar Publishing, 2013.
- Employment Discrimination: Law and Theory, Foundation Press, 2005, 2009 (2d edition) (with George Rutherglen).
- Economics of Labor and Employment Law: Volumes I and II, Edward Elgar Publishing, 2007. http://www.elgar.co.uk/bookentry_main.lasso?id=4070
- Foundations of Employment Discrimination Law, Foundation Press, 2003 (2d edition).
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Book Chapters:

- "Drug Prohibitions and Its Alternatives." Chapter 2 in Cook, Philip J., Stephen Machin, Olivier Marie, and Giovanni Mastrobuoni, eds, *Lessons from the Economics of Crime: What Reduces Offending?* MIT Press. 45-66 (2013).
- "The Death Penalty," Chapter in Encyclopedia of Law and Economics, Spring (2013).
- "Rethinking America's Illegal Drug Policy," in Philip J. Cook, Jens Ludwig, and Justin McCrary, eds, Controlling Crime: Strategies and Tradeoffs (2011), pp.215-289 (with Benjamin Ewing and David Peloquin).
- "Assessing the Relative Benefits of Incarceration: The Overall Change Over the Previous Decades and the Benefits on the Margin," in Steven Raphael and Michael Stoll, eds., "Do Prisons Make Us Safer? The Benefits and Costs of the Prison Boom," pp. 269-341 (2009).
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- "The Evolution of Employment Discrimination Law in the 1990s: A Preliminary Empirical Evaluation" (with Peter Siegelman), in Laura Beth Nielsen and Robert L. Nelson, eds., Handbook of Employment Discrimination Research (2005).

- "Divining the Impact of Concealed Carry Laws," in Jens Ludwig and Philip Cook, Evaluating Gun Policy: Effects on Crime and Violence (Washington D.C.: Brookings, 2003).

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- "Testing the Immunity of the Firearm Industry to Tort Litigation," JAMA Intern Med. Published online November 14, 2016. <http://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2582991> (with David Studdert and Michelle Mello).
- "Empirical Analysis and the Fate of Capital Punishment," 11 Duke Journal of Constitutional Law and Public Policy 51-106 (2016). Available at: <http://scholarship.law.duke.edu/djclpp/vol11/iss1/3>
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- "Uses and Abuses of Empirical Evidence in the Death Penalty Debate," 58 Stanford Law Review 791 (2005) (with Justin Wolfers).
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- "Judge Bork, Anti-Trust Law, and the Bending of 'Original Intent'," Chicago Tribune, sec.1, pg. 15, July 22, 1987.
- "Posner's Third Symphony: Thinking about the Unthinkable," 39 Stanford Law Review 791 (1987)(with Ian Ayres).
- "Determinants of Job Turnover of Young Men and Women in the U.S.--A Hazard Rate Analysis," in Schultz, T.P., ed., Research in Population Economics, vol.6, Greenwich, Conn.: JAI Press (1987).
- "A Comparison of Male-Female Hazard Rates of Young Workers, 1968-1971," Working Paper #48, Center for Studies in Law, Economics and Public Policy; Yale Law School (1986).
- "Hazard Rates of Young Male and Female Workers--Recent Developments," Working Paper #51, Center for Studies in Law, Economics and Public Policy; Yale Law School (1986).
- "Is Title VII Efficient?" 134 U. Pa. L. Rev. 1411 (1986).
- Reprinted in Paul Burstein, ed., Equal Employment Opportunity, Aldine De Gruyter, New York (1994).
- "Section I Cases," Sherman's Summations, Vol.3, No.2, Sherman Act Committee of the A.B.A. Antitrust Section, Fall, 1982, at 49.
- "An Evaluation of the Constitutionality of S. 114, The Proposed Federal Death Penalty Statute," Hearings before the U.S. Senate Judiciary Committee, April 27, 1981, at 151.
- "Godfrey v. Georgia: Creative Federalism, the Eighth Amendment, and the Evolving Law of Death," 30 Catholic University Law Review 13 (1980).
- "Criminal Code Revision--Contempt of Court and Related Offenses," Hearings before the Subcommittee on Criminal Justice of the House Judiciary Committee, July 18, 1979, at 1087.

Blog Posts:

- "Orlando to Las Vegas: Guns, Law, and Mass Shootings in the U.S.," Stanford Law School Legal Aggregate Blog, October 3, 2017, <https://law.stanford.edu/2017/10/03/orlando-to-las-vegas-guns-and-law/>.
- "Moore v. Texas and the Pathologies that Still Mar Capital Punishment in the U.S.," March 29, 2017, <https://law.stanford.edu/2017/03/29/moore-v-texas-and-the-pathologies-that-mar-capital-punishment-in-the-u-s/>.
- "Trump and Gun Policy," Stanford Law School Legal Aggregate Blog, November 12, 2016, <http://stanford.io/2eoWnna>
- "Facts Do Not Support Claim That Guns Make Us Safer" Stanford Law School Legal Aggregate Blog, October 12, 2015, <https://law.stanford.edu/2015/10/12/professor-john-donohue-facts-do-not-support-claim-that-guns-make-us-safer/>
- "When will America wake up to gun violence?" CNN.com, July 20, 2012, <http://www.cnn.com/2012/07/20/opinion/donohue-gun-control/index.html>

- "It Takes Laws to Control the Bad Guys," The New York Times -- Room For Debate: <http://www.nytimes.com/roomfordebate/2011/01/11/more-guns-less-crime> (January 11, 2011).
- "Have "Woman-Protective" Studies Resolved the Abortion Debate? Don't Bet on It," <http://balkin.blogspot.com/2008/09/have-woman-protective-studies-resolved.html> (September 2008).
- "Dodging the Death Penalty Bullet On Child Rape," <http://balkin.blogspot.com/2008/07/dodging-death-penalty-bullet-on-child.html> (July 2008).
- "Why I'd Stick With Yale Clerks-- Some Econometric Ruminations," <http://balkin.blogspot.com/2008/04/why-id-stick-with-yale-clerks-some.html> (April 2008).

WORKSHOPS AND ADDRESSES

- Panelist, "Public Carry: Defending Against Efforts to Expand Carry Laws," **National Gun Violence Prevention Meeting**, Washington, D.C., October 18, 2017
- "Keynote Presentation: Right-to-Carry Laws and Violent Crime," Second Amendment Litigation & Jurisprudence Conference, **The Law Center to Prevent Gun Violence**, October 16, 2017.
- "The Latest Evidence on Abortion Legalization and Crime," Conference on Empirical Legal Studies, Cornell University, October 13, 2017.
- "Comey, Trump, and the Puzzling Pattern of Crime in 2015 and Beyond," **University of Texas School of Law and Economics Seminar**, April 24, 2017, Faculty Workshop, **UC Davis School of Law**, April 10, 2017; Law and Social Science Seminar, **Texas A&M University School of Law**, March 6, 2017; Quantlaw, **University of Arizona Law School**, February 17, 2017.
- Debate with Kent Scheidegger on Capital Punishment, Philosophy of Punishment Seminar, **JFK University School of Law**, March 18, 2017.
- "The Evidence on Guns and Gun Laws," **Federal Bar Council Program on Guns and Gun Laws -- Rancho Mirage**, California, February 23, 2017.
- "Guns, Crime and Race in America," Stanford's Center for Population Health Sciences, **Stanford Medical School**, October 17, 2016.
- "Evaluating the Death Penalty," Forum on California Propositions 62 and 66, **Stanford Law School**, September 14, 2016.
- "Empirical Analysis and the Fate of Capital Punishment," Colloquium, Presley Center for Crime and Justice Studies; **University of California, Riverside**, October 24, 2016.
- "Gun Violence and Mental Illness," Department of Psychiatry, **Stanford University**, August 25, 2016.
- "The Battle Over Gun Policy In America," Physicians and Social Responsibility" seminar; **Stanford Medical School**, October 3, 2016; **Bioethics Committee of the San Mateo County Medical Association**, April 27, 2016; **The League of Women Voters of Palo Alto**, April 19, 2016; Human Rights and Health Seminar, **Stanford**

University, April 12, 2016; Bechtel International Center, **Stanford University**, February 23, 2016; Stanford in Government Seminar, Haas Center, **Stanford University**, February 2, 2016.

- American Economic Association Continuing Education Course "The Economics of Crime" (with Jens Ludwig), **AEA Annual Meeting**, San Francisco, January 5-7, 2016.
- "Race and Arbitrariness in the Connecticut Death Penalty," **University of Connecticut School of Law**, Nov. 20, 2015.
- "*Connecticut v. Santiago* and the Demise of the Connecticut Death Penalty," Faculty Workshop, **Stanford Law School**, August 19, 2015.
- "Do Handguns Make Us Safer? A State-Level Synthetic Controls Analysis of Right-to-Carry Laws," Second Amendment Conference, **Covington and Burling, New York**, May 14, 2015; **NBER Summer Institute**, Cambridge, MA, July 23, 2015; Faculty Workshop, **Stanford Law School**, November 11, 2015.
- "U.S. Criminal Justice Under Siege : Will Becker or Beccaria Prevail?" Faculty Seminar, **Bocconi University School of Law, Milan, Italy**, June 18, 2015.
- "Can You Believe Econometric Evaluations of Law, Policy, and Medicine?" **Stanford Law School**, Legal Theory Workshop, March 1, 2007; Faculty Workshop, **Tel Aviv University School of Law**, May 14, 2007; Faculty Workshop, **University of Haifa Law School**, May 16, 2007; Law and Economics Workshop, **Georgetown Law School**, September 19, 2007; Law and Economics Workshop, **St. Gallen Law School**, Switzerland, November 29, 2007; and Yale Law School, February 25, 2008; Law and Economics Workshop, **Swiss Institute of Technology**, Zurich, Switzerland, May 21, 2008; Faculty Workshop, **University of Virginia Law School**, October 24, 2008; Plenary Session, Latin American and Caribbean Law and Economics Association, **Universitat Pompeu Fabra (Barcelona)**, June 15, 2009; **Google, Milan, Italy**, June 8, 2015.
- Commentator: "'Throw Away the Jail or Throw Away The Key? The Effect of Punishment on Recidivism and Social Cost,'" by Miguel F. P. de Figueiredo, American Law and Economics Association Meetings, **Columbia Law School**, May 15, 2015.
- "Broken Windows, Stop and Frisk, and Ferguson," 2015 Justice Collaboratory Conference: Policing Post-Ferguson, **Yale Law School**, April 17, 2015.
- "Assessing the Development and Future of Empirical Legal Studies," **Stanford Law School** course on Modern American Legal Thought, February 25, 2015.
- Commentator: "Payday Lending Restrictions and Crimes in the Neighborhood," by Yilan Xu, 9th Annual Conference on Empirical Legal Studies, **Boalt Hall, Berkeley, CA**, November 7, 2014.
- "An Empirical Evaluation of the Connecticut Death Penalty Since 1973: Are There Unconstitutional Race, Gender and Geographic Disparities?" Faculty Workshop, **Economics Department, Rice University**, Houston, TX, Feb. 18, 2014; Law and Economics Workshop, **University of Virginia Law School**, September 11, 2014; Faculty Colloquium, **University of San Diego School of Law**, October 3, 2014.
- "What's Happening to the Death Penalty? A Look at the Battle in Connecticut," **Hamilton College**, Clinton, New York, June 6, 2014.

- Panel Member, Research Methods Workshop, Conference for Junior Researchers on Law and Society, **Stanford Law School**, May 15, 2014.
- "Logit v. OLS: A Matter of Life and Death," Annual Meeting of the American Law and Economics Association, **University of Chicago**, May 9, 2014.
- "Guns: Law, Policy, Econometrics," Second Amendment Litigation and Jurisprudence Conference, **Jenner & Block**, Chicago, May 8, 2014.
- "The Impact of Antidiscrimination Law: The View 50 Years after the Civil Rights Act of 1964," **Renaissance Weekend**, Liguna Niguel, CA, Feb. 15, 2014.
- "Concealed Carry and Stand Your Ground Law," **Renaissance Weekend**, Liguna Niguel, CA, Feb. 15, 2014.
- "Reducing Gun Violence," Forum on Gun Violence Reduction, Mountainview City Hall, Mountainview, CA, Feb. 8, 2014.
- "Gun Policy Debate," **C-SPAN**. National Cable Satellite Corporation, Jan. 16, 2014. <<http://www.c-span.org/video/?317256-1/GunPoli>>.
- "Trial and Decision in the Connecticut Death Penalty Litigation," Faculty Workshop, **Stanford Law School**, November 20, 2013.
- "Rethinking America's Illegal Drug Policy," Law and Economics Workshop, **Harvard Law School**, April 20, 2010; NBER Conference, "Econometrical Crime Control," **Boalt Hall**, Berkeley, CA, January 16, 2010; **NBER Summer Institute** Pre-Conference "Econometrical Crime Control," July 23, 2009; **Whitney Center** Lecture Series, Hamden, CT, October 5, 2009; Law and Economics Workshop, **University of Chicago Law School**, October 13, 2009; Seminar for Spanish Law Professors, **Harvard Law School**, October 23, 2009; The Criminal Law Society, **Stanford Law School**, March 31, 2011, **University of Denver Sturm College of Law**, April 21, 2011; Law and Economics Workshop, **Boalt Hall**, Berkeley, CA, October 17, 2011; Shaking the Foundations Conference, **Stanford Law School**, November 2, 2013.
- "The Challenge to the Connecticut Death Penalty," **Yale Law School**, Death Penalty Clinic, November 5, 2007; Graduate Student Seminar, November 11, 2009; Stanford Program in International Legal Studies Seminar, **Stanford Law School**, Nov. 11, 2010; Faculty Workshop, **Stanford Law School**, June 8, 2011; Faculty workshop, **Duke Law School**, April 13, 2012; Program on Public Policy, **Stanford University**, May 2, 2012; Annual Meeting of the American Law and Economics Association, **Vanderbilt Law School**, Nashville, TN, May 18, 2013; Faculty Workshop, **University of Arizona Law School**, October 17, 2013; 8th Annual Conference on Empirical Legal Studies, **University of Pennsylvania Law School**, October 26, 2013.
- Commentator: "How to Lie with Rape Statistics" by Corey Rayburn Yung, 8th Annual Conference on Empirical Legal Studies, **University of Pennsylvania Law School**, October 2013.
- "An Empirical Look at Gun Violence in the U.S." **University of Arizona Law School**, October 17, 2013
- Discussant, "Sex Offender Registration and Plea Bargaining," **NBER Labor Summer Institute**, Cambridge, MA, July 25, 2013.
- "What Works in the War Against Crime?" **Renaissance Weekend**, Jackson Hole, Wyoming, July 5, 2013.

- Seminar Presentation, "Statistics and the Streets – Curbing Crime, Realities of the Death Penalty, and Successes in Public Safety," **Renaissance Weekend**, Jackson Hole, Wyoming, July 5, 2013.
- Flashes of Genius (Glimpses of Extra-ordinarily Novel Thinking) -- "Stemming Gun Violence," **Renaissance Weekend**, Jackson Hole, Wyoming, July 5, 2013.
- "Can Laws Reduce Crime?" Safe Oakland Speakers Series, Holy Names University, Oakland, CA, May 1, 2013, <http://www.ustream.tv/channel/safe-oakland-speaker-series>
- Presentation on "The Death Penalty in America" on a panel on "human rights and criminal justice systems in the world," Science for Peace conference at Bocconi University in Milan, Italy, November 15, 2012. <http://www.fondazioneveronesi.it/scienceforpeace2012/>
- Seminar Presentation, "America's Criminal Justice System," **Renaissance Weekend**, Santa Monica, CA., Feb. 19, 2012.
- "Statistical Inference, Regression Analysis and Common Mistakes in Empirical Research," SPILLS Fellow's Workshop, **Stanford Law School**, February 2, 2012.
- "New Evidence in the 'More Guns, Less Crime' Debate: A Synthetic Controls Approach," Conference on Empirical Legal Studies, **Northwestern Law School**, November 4, 2011.
- "Drug Legalization and its Alternatives," *Lessons from the Economics of Crime: What Works in Reducing Offending?* **CESifo Venice Summer Institute Workshop**, July 22, 2011.
- "Incapacitating Addictions: Drug Policy and American Criminal Justice," in Rethinking the War on Drugs through the US-Mexico Prism, **Yale Center for the Study of Globalization**, May 12, 2011.
- Plenary Session: Flashes of Genius (Glimpses of Extra-ordinarily Novel Thinking) -- "Has Legalized Abortion Reduced Crime?" **Renaissance Weekend**, Liguna Niguel, CA., Feb. 18, 2011.
- "An Evidence-Based Look at the More Guns, Less Crime Theory (after Tucson)" The American Constitution Society for Law and Policy (ACS), **Stanford Law School**, January 25, 2011; **Renaissance Weekend**, Liguna Niguel, CA., Feb. 19, 2011; "Faculty Forum" at the External Relations Office, **Stanford Law School**, April 5, 2011.
- "Empirical Evaluation of Law: The Dream and the Nightmare," SPILS Fellows Lecture, **Stanford Law School**, January 15, 2015; Legal Studies Workshop, **Stanford Law School**, Feb. 7, 2011; **Renaissance Weekend**, Liguna Niguel, CA., Feb. 20, 2011; **University of Denver Sturm College of Law**, April 22, 2011; Presidential Address, Annual Meeting of the American Law and Economics Association, **Columbia University**, May 20, 2011.
- Death Sentencing in Connecticut," **American Society of Criminology Annual Meeting**, San Francisco, Nov. 17, 2010.
- "The Impact of Right to Carry Laws and the NRC Report: Lessons for the Empirical Evaluation of Law and Policy," Conference on Empirical Legal Studies, **Yale Law School**, Nov. 6, 2010.
- Comment on Bushway and Gelbach, "Testing for Racial Discrimination in Bail Setting Using Nonparametric Estimation of a Parametric Model," Conference on Empirical Legal Studies, **Yale Law School**, Nov. 6, 2010.

- Commentator, "A Test of Racial Bias in Capital Sentencing," **NBER Political Economy Program Meeting**, April 23, 2010.
- "The (Lack of a) Deterrent Effect of Capital Punishment," Faculty Workshop, **University of Chicago Economics Department**, October 21, 2009.
- Keynote Address, "The Evolution of Econometric Evaluation of Crime and Deterrence," 1st Paris& Bonn Workshop on Law and Economics: The Empirics of Crime and Deterrence, **University of Paris Ouest Nanterre**, September 24, 2009.
- Comment on Cook, Ludwig, and Samaha, "Gun Control after *Heller*: Litigating Against Regulation," NBER Regulation and Litigation Conference, **The Boulders**, Carefree, Arizona, September 11, 2009.
- "Impact of the Death Penalty on Murder in the US," Faculty Workshop, Law School, **Universitat Pompeu Fabra (Barcelona)**, June 18, 2009.
- Comment on Joanna Shepherd's "The Politics of Judicial Opposition," Journal of Institutional and Theoretical Economics Conference, **Kloster Eberbach, Germany**, June 12, 2009.
- "The Great American Crime Drop of the '90s: Some Thoughts on Abortion Legalization, Guns, Prisons, and the Death Penalty," **Hamilton College**, Clinton, NY, June 5, 2009.
- "The Impact of the ADA on the Employment and Earnings of the Disabled," **American Law and Economics Association Meetings**, University of San Diego, May 15, 2009.
- "Crime and Punishment in the United States," **Eastern State Penitentiary, Yale Alumni Event**, Philadelphia, PA, April 26, 2009.
- "Measuring Culpability in Death Penalty Cases," Conference on Applications of Economic Analysis in Law, **Fuqua School of Business, Duke University**, April 18, 2009.
- "Autopsy of a Financial Crisis," Workshop on New International Rules and Bodies for Regulating Financial Markets, **State University of Milan**, March 23, 2009.
- "Yet Another Refutation of the More Guns, Less Crime Hypothesis – With Some Help From Moody and Marvell, Law and Economics Workshop, **NYU Law School**, March 10, 2009.
- Intelligence-Squared Debate: "Guns Reduce Crime," **Rockefeller University**, New York, October 28, 2008.
- "The D.C. Handgun Controls: Did the Supreme Court's Decision Make the City Safer?" Debate, **The Contemporary Club of Albemarle**, Charlottesville, VA, October 23, 2008.
- "Evaluating the Empirical Claims of the Woman-Protective Anti-Abortion Movement," Panel on The Facts of the Matter: Science, Public Health, and Counseling, Yale Conference on the Future of Sexual and Reproductive Rights, **Yale Law School**, October 11, 2008.
- "Empirical Evaluation of Gun Policy," **Harvard Law School**, October 9, 2008.
- "Assessing the Relative Benefits of Incarceration: The Overall Change Over the Previous Decades and the Benefits on the Margin," **Russell Sage Foundation**, New York, May 3, 2007; Law and Economics Workshop, **Tel Aviv University School of Law**, May 28, 2008.
- Death Penalty Debate with Orin Kerr, **Bloggingheads**, April 11, 2008.

- "Evaluating Connecticut's Death Penalty Regime," Faculty Public Interest Conversation, **Yale Law School**, April 9, 2008.
- "The Death Penalty in Connecticut and the United States," **The Whitney Center**, Hamden, CT, November 5, 2007; Seminar on Advanced Criminal Law: Criminal Sentencing and the Death Penalty, **Fordham Law School**, April 8, 2008; Law and Economics Workshop, **Swiss Institute of Technology**, Zurich, Switzerland, May 20, 2008.
- Radio Interview, "The Death of Capital Punishment?" Morning Edition: Where We Live. WNPR. Connecticut, March 10, 2008.
- Comment on Thomas Dee's "Born to Be Mild: Motorcycle Helmets and Traffic Safety," **American Economics Association Meetings**, New Orleans, Louisiana, January 4, 2008.
- "The Empirical Revolution in Law and Policy: Jubilation and Tribulation," **Keynote Address, Conference on Empirical Legal Studies, NYU Law School**, November 9, 2007.
- "The Optimal Rate of Incarceration," **Harvard Law School**, October 26, 2007.
- "Empirical Evaluation of Law: The Impact on U.S Crime Rates of Incarceration, the Death Penalty, Guns, and Abortion," Law and Economics Workshop, **St. Gallen Law School, Switzerland**, June 25, 2007.
- Comment on Eric Baumer's "A Comprehensive Assessment of the Contemporary Crime Trends Puzzle," Committee on Law and Justice Workshop on Understanding Crime Trends, **National Academy of Sciences**, Washington, D.C., April 25, 2007.
- Comment on Bernard Harcourt, Third Annual Criminal Justice Roundtable Conference, **Yale Law School**, "Rethinking the Incarceration Revolution Part II: State Level Analysis," April 14, 2006.
- "Corporate Governance in America: The Disney Case," **Catholic University Law School**, Milan, Italy, March 19, 2007.
- "The U.S Tort System," (Latin American) Linkages Program, **Yale Law School**, February 13, 2007.
- Panel Member, "Guns and Violence in the U.S.," **Yale University, International Center**, January 24, 2007.
- "Economic Models of Crime and Punishment," Punishment: The U.S. Record: A Social Research Conference at **The New School**, New York City, Nov. 30, 2006
- Comment on Baldus et al, "Equal Justice and the Death Penalty: The Experience fo the United States Armed Forces, Conference on Empirical Legal Studies, **University of Texas Law, School**, Austin, Texas, October 27, 2006.
- "Empirical Evaluation of Law: The Promise and the Peril," **Harvard Law School**, October 26, 2006.
- "Estimating the Impact of the Death Penalty on Murder," Law and Economics Workshop, **Harvard Law School**, September 12, 2006; Conference on Empirical Legal Studies, **University of Texas Law School**, October 28, 2006; Joint Workshop, Maryland Population Research Center and School of Public Policy, **University of Maryland**, March 9, 2007.
- "Why Are Auto Fatalities Dropping so Sharply?" **Faculty Workshop, Wharton**, Philadelphia, PA, April 19, 2006.
- "The Law of Racial Profiling," Law and Economic Perspectives on Profiling Workshop, **Northwestern University Department of Economics**, April 7, 2006.

- "Landmines and Goldmines: Why It's Hard to Find Truth and Easy To Peddle Falsehood in Empirical Evaluation of Law and Policy," **Rosenthal Lectures, Northwestern University School of Law**, April 4-6, 2006.
- "The Impact of Legalized Abortion on Crime," **American Enterprise Institute**, March 28, 2006.
- "The Impact of Damage Caps on Malpractice Claims: Randomization Inference with Difference-in-Differences," **Conference on Medical Malpractice, The Rand Corporation**, March 11, 2006.
- "Powerful Evidence the Death Penalty Deters?" **Leighton Homer Surbeck Chair Lecture, Yale Law School**, March 7, 2006.
- "Uses and Abuses of Empirical Evidence in the Death Penalty Debate," Faculty Workshop, **University of Connecticut Law School**, October 18, 2005; Faculty Workshop, **UCLA Law School**, February 3, 2006; Law and Economics Workshop, **Stanford Law School**, February 16, 2006; ; Law Faculty, **University of Cambridge, Cambridge, England**, February 28, 2006; **University of Illinois College of Law**, Law and Economics Workshop, March 2, 2006; Faculty Workshop, **Florida State University Law School**, March 30, 2006; **ALEA, Berkeley, CA** May 6, 2006; **University of Chicago Law School**, Law and Economics Workshop, May 9, 2006.
- "Is Gun Control Illiberal?" **Federalist Society Debate with Dan Kahan at Yale Law School**, January 31, 2006.
- "Witness to Deception: An Insider's Look at the Disney Trial," **2005-2006 Distinguished Lecture, Boston University School of Law**, November 10, 2005; **Center for the Study of Corporate Law, Yale Law School**, November 3, 2005; **Law Offices of Herbert Smith, London, England**, February 23, 2006; Law Faculty, **University of Cambridge, Cambridge, England**, February 27, 2006.
- "Understanding the Surprising Fall in Crime in the 1990s," **Rotary Club, Orange, CT**, August 5, 2005; Faculty Workshop, **Yale School of Management**, September 21, 2005.
- Panel Member, "The Board's Role in Corporate Strategy," **The Yale Global Governance Forum, Yale School of Management**, September 8, 2005.
- "Crime and Abortion," **Museo de la Ciudad de Mexico, Mexico City**, October 20, 2003.
- "Allocating Resources towards Social Problems and Away From Incarceration as a Means of Reducing Crime," **MacArthur Foundation Research Network on Adolescent Development and Juvenile Justice, San Francisco, CA**, February 28, 2003.
- "Shooting Down the More Guns, Less Crime Hypothesis," **Stanford Law School**, Law and Economics Seminar, January 28, 2003; Faculty Workshop, **Center for the Study of Law and Society, Boalt Hall, University of California, Berkeley**, Feb. 24, 2003; Development Workshop, **Stanford Law School**, April 25, 2003; Faculty Workshop, **Stanford Law School**, July 2, 2003; Law and Public Affairs Program Workshop, **Princeton University**, September 29, 2003; Stanford Alumni Weekend, **Stanford University**, October 17, 2003; Faculty Workshop, **CIDE, Mexico City**, October 20, 2003.
- "The Impact of Legalized Abortion on Teen Childbearing," **NBER Labor Summer Institute, Cambridge, MA**, July 30, 2002.
- "Do Concealed Handgun Laws Reduce Crime?" Faculty Workshop, **Stanford Law School**, October 4, 2000; First-Year Orientation, **Stanford Law School**, September 5, 2001; Faculty Workshop, **Harvard Law School**, April 26, 2002; Faculty Workshop, **Columbia Law School**, April 29, 2002.
- "The Evolution of Employment Discrimination Law in the 1990s: An Empirical Investigation," **Fellows Workshop, American Bar Foundation**, February 11, 2002.

- "The Role of Discounting in Evaluating Social Programs Impacting on Future Generations: Comment on Arrow and Revesz," Colloquium on Distributive Justice, **Stanford Law School**, Oct. 18, 2001.
- "The Impact of Wrongful Discharge Laws," **NBER Labor Summer Institute**, Cambridge, MA, July 30, 2001; Labor and Employment Seminar, **NYU Law School**, October 16, 2001; Faculty Workshop, **Stanford Law School**, September 18, 2002; **Yale Law School**, January, 2004.
- "Racial Profiling: Defining the Problem, Understanding the Cause, Finding the Solution," **American Society of Criminology Conference**, San Francisco, CA, November 15, 2000.
- "Institutional Architecture for Building Private Markets," Conference on "Latin America and The New Economy" at **Diego Portales University** in Santiago, Chile, October 26, 2000.
- "The History and Current Status of Employment Discrimination Law in the United States," **Unicapital School of Law**, (Centro Universitario Capital), Sao Paulo, Brazil, March 10, 2000.
- "Corporate Governance in Developing Countries: Opportunities and Dangers," Conference on Neoliberal Policies for Development: Analysis and Criticism," **University of Sao Paulo Law School**, March 13, 2000
- "Legalized Abortion and Crime," Law and Economics Workshop, **University of Pennsylvania Law School**, September 21, 1999; Faculty Workshop, **Yale Law School**, September 27, 1999; **John Jay College of Criminal Justice**, October 7, 1999; Faculty Workshop, **Quinnipiac Law School**, October 13, 1999; Faculty Workshop, **University of Connecticut Law School**, October 19, 1999; **University of Virginia Law School**, October 25, 1999; Faculty Workshop, **Baruch College**, November 9, 1999; MacArthur Foundation Social Interactions and Economic Inequality Network Meeting, **Brookings Institution**, December 4, 1999; Faculty Workshop, **NYU Law School**, January 21, 2000; Faculty Workshop, **University of San Diego Law School**, February 18, 2000; Public Economics Workshop, Department of Economics, **Stanford University**, April 28, 2000; Law and Economics Workshop, **University of California at Berkeley Law School**, September 18, 2000; Faculty Workshop, **Cornell Law School**, September 26, 2000; OB-GYN Grand Rounds, **Stanford Medical School**, October 2, 2000; **Center for Advanced Studies in the Behavioral Sciences**, October 11, 2000; Faculty Workshop, **Graduate School of Business**, February 5, 2002.
- Panel member, Session on Executive Compensation, Director's College, **Stanford Law School**, March 23, 1999.
- "Exploring the Link Between Legalization of Abortion in the 1970s and Falling Crime in the 1990s," Law and Economics Workshop, **Harvard Law School**, March 16, 1999; Law and Economics Workshop, **University of Chicago Law School**, April 27, 1999; Faculty Workshop, **Stanford Law School**, June 30, 1999.
- "Is the Increasing Reliance on Incarceration a Cost-Effective Strategy of Fighting Crime?" Faculty Workshop, **University of Wisconsin School of Social Science**, February 19, 1999.
- "What Do We Know About Options Compensation?" Institutional Investors Forum, **Stanford Law School**, May 29, 1998.
- Commentator on Orlando Patterson's presentation on "The Ordeal of Integration," **Stanford Economics Department**, May 20, 1998.
- "Understanding The Time Path of Crime," Presentation at Conference on Why is Crime Decreasing? **Northwestern University School of Law**, March 28, 1998; Faculty Workshop, **Stanford Law School**, September 16, 1998; Faculty Workshop, **University of Michigan Law School**, February 18, 1999.
- Commentator, Conference on Public and Private Penalties, the **University of Chicago Law School**, Dec. 13-14, 1997.

- "Some Thoughts on Affirmative Action," Presentation at a conference on Rethinking Equality in the Global Society, Washington University School of Law, November 10, 1997.
- Commentator on Chris Jencks' Presentation on Welfare Policy, Stanford Economics Department, October 8, 1997.
- "The Impact of Race on Policing, Arrest Patterns, and Crime," Faculty Workshop, Stanford Law School, September 10, 1997; Law and Economics Workshop, University of Southern California Law School, October 23, 1997; Law and Economics Workshop, Columbia University Law School, November 24, 1997; Law and Economics Workshop, Haas School of Business, University of California at Berkeley, February 19, 1998; Annual Meeting of the American Law and Economics Association, University of California at Berkeley, May 8, 1998; Conference on the Economics of Law Enforcement, Harvard Law School, October 17, 1998.
- "Crime in America: Understanding Trends, Evaluating Policy," Stanford Sierra Camp, August 1997.
- "Executive Compensation: What Do We Know?" TIAA-CREF Committees on Corporate Governance and Social Responsibility, Center for Economic Policy Research, Stanford University, June 27, 1997; NASDAQ Director's Day, Stanford University, June 30, 1997.
- Panel Chair, Criminal Law (Theory), Criminal Law (Empirical), and Labor/Discrimination/Family Law, American Law and Economics Association, University of Toronto Law School, May 9-10, 1997.
- Commentator, "Diversity in Law School Hiring," Stanford Law School, February 25, 1997.
- Keynote Speaker, "The Optimal Rate of Crime," 11th Annual Conference, The Oklahoma Academy for State Goals, Tulsa, Oklahoma, May 7, 1996.
- Panel member, Session on Executive Compensation, Director's College, Stanford Law School, March 28-29, 1996.
- "The Power of Law: Can Law Make a Difference in Improving the Position of Women and Minorities in the Labor Market?" The Fellows of the American Bar Foundation, Baltimore, Maryland, February 3, 1996.
- "Public Action, Private Choice and Philanthropy: Understanding the Sources of Improvement in Black Schooling Quality in Georgia, 1911-1960," Stanford Faculty Workshop, January 24, 1996; Faculty Workshop, University of Virginia Law School, January 22, 1997; National Bureau of Economic Research, Cambridge, Massachusetts, Labor Studies Conference, April 3, 1998.
- Commentator, "The Effect of Increased Incarceration on Crime," Meetings of the American Economics Association, San Francisco, January 6, 1996.
- Commentator, Symposium on Labor Law, University of Texas Law School, November 10-11, 1995.
- Panel Member, Symposium on Criminal Justice, Stanford Law School, October 6-7, 1995.
- Commentator, "The Litigious Plaintiff Hypothesis," Industrial and Labor Relations Conference, Cornell University, May 19, 1995.
- Commentator on Keith Hylton's, "Fee Shifting and Predictability of Law," Faculty Workshop, Northwestern University School of Law, February 27, 1995.
- "The Selection of Employment Discrimination Disputes for Litigation: Using Business Cycle Effects to Test the Priest/Klein Hypothesis," Stanford University, Law and Economics Seminars, October 31, 1994.

- "Is the United States at the Optimal Rate of Crime?" Faculty Workshop, **Indiana University School of Law**, Indianapolis, November 18, 1993; Faculty Workshop, **Northwestern University School of Law**, April 18, 1994; Law and Economics Workshop, **Stanford Law School**, April 28, 1994; Meetings of the American Law and Economics Association, **Stanford Law School**, May 13, 1994; **American Bar Foundation**, September 7, 1994; Faculty Workshop, **DePaul Law School**, September 21, 1994; Law and Economics Workshop, **University of Chicago Law School**, October 11, 1994; Faculty Seminar, **Stanford Law School**, October 31, 1994; Law and Economics Luncheon, **Stanford Law School**, November 1, 1994; Faculty Seminar Workshop, **University of Illinois College of Law**, Champaign, November 22, 1994; Law and Economics Workshop, **Harvard Law School**, November 29, 1994; School Alumni Luncheon, Chicago Club, December 13, 1994; **Northwestern Law School**; Law and Economics Workshop, **Yale Law School**, February 1, 1996; Faculty Workshop, **Cornell Law School**, April 10, 1996; Faculty Workshop, **Tokyo University Law School**, June 4, 1996; Panel on "The Economics of Crime," **Western Economics Association Meeting**, San Francisco, July 1, 1996.
- "The Broad Path of Law and Economics," Chair Ceremony, **Northwestern University School of Law**, September 30, 1994.
- Commentator on Paul Robinson's "A Failure of Moral Conviction," **Northwestern University School of Law**, September 20, 1994.
- "The Do's of Diversity, The Don'ts of Discrimination," Kellogg School of Business, **Northwestern University**, May 17, 1994.
- "Does Law Matter in the Realm of Discrimination?" **Law and Society Summer Institute**, Pala Mesa Lodge, Fallbrook, California, June 25, 1993.
- Commentator, "The Double Minority: Race and Sex Interactions in the Job Market," Society for the Advancement of Socio-Economics, **New School for Social Research**, March 28, 1993.
- "The Effects of Joint and Several Liability on Settlement Rates: Mathematical Symmetries and Meta-Issues in the Analysis of Rational Litigant Behavior," Economic Analysis of Civil Procedure, **University of Virginia School of Law**, March 26, 1993.
- Debate with Richard Epstein on Employment Discrimination Law, **Chicago Federalist Society**, February 23, 1993.
- Panel Chair, "Optimal Sanctions and Legal Rules in Tort and Criminal Law," Meetings of Annual Association of Law and Economics, **Yale Law School**, May 15, 1992.
- Panel Member, "The Law and Economics of Employment at Will," **The Institute For Humane Studies**, Fairfax, Virginia, March 27, 1992.
- "The Efficacy of Title VII," Debate with Professor Richard Epstein, **University of Chicago Law School**, February 26, 1992.
- Moderator, "Using Testers to Demonstrate Racial Discrimination," **University of Chicago Law School**, February 13, 1992.
- "Law & Macroeconomics: The Effect of the Business Cycle on Employment Discrimination Litigation," Law and Society Workshop, **Indiana University**, November 6, 1991; Faculty Workshop, **University of North Carolina Law School**, Chapel Hill, November 8, 1991; Faculty Workshop, **Northwestern University School of Law**, December 11, 1991; Law and

- Economics Conference, **Duquesne Law School**, March 14, 1992; **University of Chicago Law School**, April 2, 1992.
- Panel Chair and Commentator, "New Perspectives on Law and Economics," **Society for the Advancement of Socioeconomics**, Stockholm, June 17, 1991; **Law and Society Meetings**, Amsterdam, June 29, 1991.
- Panel Chair, "Regulation of International Capital Markets," **Law and Society Meetings**, Amsterdam, June 27, 1991.
- Panel Chair, "The Law and Economics of Discrimination," American Association of Law and Economics, **University of Illinois Law School**, May 24, 1991.
- "The Economics of Employment Discrimination Law," **Industrial Relations Research Association**, Chicago, Illinois, March 4, 1991.
- "Does Current Employment Discrimination Law Help or Hinder Minority Economic Empowerment?" Debate with Professor Richard Epstein, The Federalist Society, **Northwestern Law School**, February 26, 1991.
- Panel Member, "The Law and Economics of Employment Discrimination," **AALS Annual Meeting**, Washington, D.C., January 6, 1991.
- "Re-Evaluating Federal Civil Rights Policy," Conference on the Law and Economics of Racial Discrimination in Employment, **Georgetown University Law Center**, November 30, 1990.
- "Opting for the British Rule," Faculty Seminar, **Northwestern Law School**, September 11, 1990; Faculty Seminar, **University of Virginia Law School**, September 14, 1990; Law and Economics Seminar, **University of Michigan Law School**, October 18, 1990; Faculty Workshop, **NYU Law School**, November 14, 1990; Faculty Workshop, **University of Florida Law School**, March 18, 1991.
- "The Effects of Fee Shifting on the Settlement Rate: Theoretical Observations on Costs, Conflicts, and Contingency Fees," at the **Yale Law School Conference "Modern Civil Procedure: Issues in Controversy,"** June 16, 1990.
- "Studying the Iceberg From Its Tip?: An Analysis of the Differences Between Published and Unpublished Employment Discrimination Cases," **Law and Society Meetings**, Berkeley, California, May 31, 1990.
- Panel Discussion on Tort Reform, **University of Pennsylvania Law School**, April 27, 1990.
- Panel Discussion of "The Role of Government in Closing the Socio-Economic Gap for Minorities," at the Federalist Society National Symposium on "The Future of Civil Rights Law," **Stanford Law School**, March 16, 1990.
- "Continuous versus Episodic Change: The Impact of Affirmative Action and Civil Rights Policy on the Economic Status of Blacks," **University of Virginia Economics Department**, February 15, 1990; **Princeton University Department of Economics**, February 21, 1990 (with James Heckman); Law & Economics Workshop, **University of Toronto Law School**, October 8, 1991.
- "Sex Discrimination in the Workplace: An Economic Perspective," Fellows Seminar, **American Bar Foundation**, October 16, 1989.
- "The Changing Nature of Employment Discrimination Litigation," Law and Economics Workshop, **Columbia Law School**, March 23, 1989; Faculty Seminar, **University of Virginia Law School**, March 24, 1989; Law and Economics Workshop, **University of Chicago**, April 25, 1989; **Law & Society Meeting**; Madison, Wisconsin,

June 8, 1989; Labor Economics Workshop, **University of Illinois**, Chicago, November 1, 1989; Law & Economics Workshop, **University of Pennsylvania Law School**, November 9, 1989; Law and Economics Seminar, **University of California at Berkeley**, October 4, 1990; Law and Social Science Workshop, **Northwestern University**, February 3, 1991; Law and Economics Seminar, **Stanford Law School**, March 21, 1991; Faculty Workshop, **Cornell Law School**, April 3, 1991; Visiting Committee, **Northwestern Law School**, April 5, 1991.

- "Law & Economics: The Third Phase," The Association of General Counsel, **Northwestern University School of Law**, October 14, 1988.
- "Employment Discrimination Litigation," **Northwestern Law School Alumni Monthly Loop Luncheon. Chicago Bar Association**, May 31, 1988.
- "The Morality of the Death Penalty." A debate with Ernest Van Den Haag. **Northwestern University School of Law**, April 19, 1988.
- "Models of Deregulation of International Capital Markets." A presentation with David Van Zandt, Faculty Seminar, **Northwestern University School of Law**, April 1, 1988; Visiting Committee, May 5, 1988.
- "Is Title VII Efficient?" A debate with Judge Richard Posner, Faculty Seminar, **Northwestern University School of Law**, November 20, 1987.
- "The Senate's Role in Confirming Supreme Court Nominees: The Historical Record," **Northwestern University School of Law**, September 22, 1987.
- "Diverting the Coasean River: Incentive Schemes to Reduce Unemployment Spells," **Yale Law School Civil Liability Workshop**, March 30, 1987; Faculty Seminar, **Northwestern University School of Law**, March 18, 1987; **University of Southern California Law Center**, May 1, 1987; and Seminar in Law and Politics, Department of Political Science, **Northwestern University**, May 8, 1987; Labor Workshop, Department of Economics, **Northwestern University**, October 27, 1987; **AALS Annual Meeting**, New Orleans, January 7, 1989.
- "Women in the Labor Market--Are Things Getting Better or Worse?" **Hamilton College**, February 23, 1987.
- "The Changing Relative Quit Rates of Young Male and Female Workers," **Hamilton-Colgate Joint Faculty Economics Seminar**, February 23, 1987.
- "Living on Borrowed Money and Time--U.S. Fiscal Policy and the Prospect of Explosive Public Debt," **Orange Rotary Club**, February 22, 1985.
- "Capital Punishment in the Eighties," **Hamilton College**, April 6, 1981.
- "Terms and Conditions of Sale Under the Uniform Commercial Code," Executive Sales Conference, **National Machine Tool Builders' Association**, May 12, 1980.

PROFESSIONAL ACTIVITIES

- Member, Committee on Law and Justice, National Research Council, October 2011 – present.
- Fellow of the Society for Empirical Legal Studies, 2015 - present.
- Co-Editor (with Steven Shavell), American Law and Economics Review, May 2006 – August 2012.
- President, American Law and Economics Association, May 2011 – May 2012.

- Co-President, Society for Empirical Legal Studies, November 2011 - August 2012. Member, Board of Directors from November 2011 - November 2014.
- Testified before the Connecticut Legislature in Support of Senate Bill 1035 and House Bill 6425 (A Bill to Eliminate the Death Penalty), March 7, 2011; Testified again before the Connecticut Judiciary Committee on March 14, 2012.
- Member of the Special Committee on ALI Young Scholars Medal, October 2009 – February 2011.
- Vice-President/President Elect, American Law and Economics Association, June 2010 – May 2011.
- Secretary-Treasurer, American Law and Economics Association, June 2009 – May 2010.
- Board of Advisors, Yale Law School Center for the Study of Corporate Law, July 2004 – August 2010.
- Evaluated the Connecticut death penalty system: "Capital Punishment in Connecticut, 1973-2007: A Comprehensive Evaluation from 4600 murders to One Execution," http://works.bepress.com/john_donohue/137/
- Member, Panel on Methods for Assessing Discrimination, National Academy of Sciences, September 2001 – June 2004. Resulting Publication: National Research Council, Measuring Racial Discrimination (2004), <http://www.nap.edu/catalog/10887.html>
- Member, National Science Foundation Review Panel, Law and Social Sciences, September, 1999 – April 2001.
- Editorial Board, Journal of Empirical Legal Studies, July 2003 – present.
- Editorial Board, International Review of Law and Economics, October 1999 – present.
- Editorial Board, Law and Social Inquiry, February 2000 – present.
- Board of Editors, American Law and Economics Review, August 1998 – April 2013.
- Consultant, Planning Meeting on Measuring the Crime Control Effectiveness of Criminal Justice Sanctions, National Academy of Sciences, Washington, D.C., June 11, 1998
- Member, Board of Directors, American Law and Economics Association, June 1994-May 1997. Member, ALEA Nominating Committee, July 1995-May 1996. Member, Program Committee, July 1996-May 1998 and July 2000 – May 2002.
- Statistical Consultant, 7th Circuit Court of Appeals Settlement Conference Project (December, 1994).
- Testified before U.S. Senate Labor Committee on evaluating the Job Corps, October 4, 1994.
- Assisted the American Bar Association Standing Committee on the Federal Judiciary in evaluating the qualifications of Ruth Bader Ginsburg (June 1993) and David Souter (June, 1990).
- Chair, AALS Section on Law and Economics, January 1990-January 1991.
- Economic Consultant to Federal Courts Study Committee. Analyzing the role of the federal courts and projected caseload for Judge Richard Posner's subcommittee. February 1989-March 1990.
- Member, 1990 AALS Scholarly Papers Committee.

- Member, Advisory Board, Corporate Counsel Center, Northwestern University School of Law. Since December 1987.
- Associate Editor, Law and Social Inquiry. Summer 1987-December 1989.
- Interviewed Administrative Law Judge candidates for U.S. Office of Personnel Management. Chicago, Illinois. May 23, 1988.
- Member, Congressman Bruce Morrison's Military Academy Selection Committee. Fall 1983.
- 1982 Candidate for Democratic Nomination, Connecticut State Senate, 14th District (Milford, Orange, West Haven).

PRO BONO LEGAL WORK

- Death Penalty case: Heath v. Alabama. Fall 1986-Fall 1989.
- Wrote brief opposing death sentence in Navy spy case. Court ruled in favor of defendant on September 13, 1985.
- Staff Attorney, Neighborhood Legal Services, January-July 1981.
- Appealed sentence of death for Georgia defendant to the United States Supreme Court. Sentence vacated on May 27, 1980. Baker v. Georgia.
- Court-appointed representation of indigent criminal defendant in District of Columbia Superior Court, February-July 1980.

RESEARCH GRANTS

- Stanford University Research Fund, January 1997 and January 1998.
- The National Science Foundation (project with James Heckman), December 1992; (project with Steve Levitt), July 1997.
- Fund for Labor Relations Studies, University of Michigan Law School, March 1988.

BAR ADMISSIONS

- Connecticut - October 1977; District of Columbia - March 1978 (Currently Inactive Status); United States Supreme Court - November 1980; U.S. District Court for the District of Connecticut – February 14, 1978.

PROFESSIONAL and HONORARY ASSOCIATIONS

- American Academy of Arts and Sciences (since April 2009).
- Research Associate, National Bureau of Economic Research (since October 1996) – in Law and Economics and Labor Studies.
- American Law Institute (since September 29, 2010).
- Member, Fellows of the Society for Empirical Legal Studies (since October 2015).
- American Bar Association
- American Economic Association

- American Law and Economics Association

PERSONAL

- Born: January 30, 1953.

DECLARATION OF SERVICE BY E-MAIL and U.S. Mail

Case Name: **Duncan, Virginia et al v. Xavier Becerra**

No.: **17-cv-1017-BEN-JLB**

I declare:

I am employed in the Office of the Attorney General, which is the office of a member of the California State Bar, at which member's direction this service is made. I am 18 years of age or older and not a party to this matter. I am familiar with the business practice at the Office of the Attorney General for collection and processing of correspondence for mailing with the United States Postal Service. In accordance with that practice, correspondence placed in the internal mail collection system at the Office of the Attorney General is deposited with the United States Postal Service with postage thereon fully prepaid that same day in the ordinary course of business.

On November 3, 2017, I served the attached **EXPERT REBUTTAL REPORT OF JOHN J. DONOHUE** by transmitting a true copy via electronic mail. In addition, I placed a true copy thereof enclosed in a sealed envelope, in the internal mail system of the Office of the Attorney General, addressed as follows:

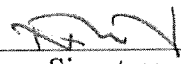
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Kirkland & Ellis LLP
655 15th Street N.W.
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I declare under penalty of perjury under the laws of the State of California the foregoing is true and correct and that this declaration was executed on November 3, 2017, at Sacramento, California.

N. Newlin
Declarant



Signature

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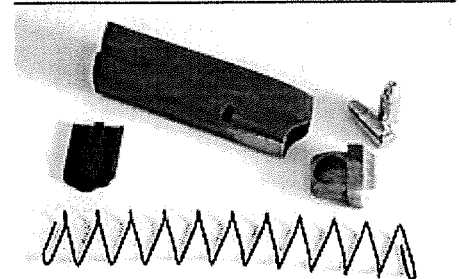
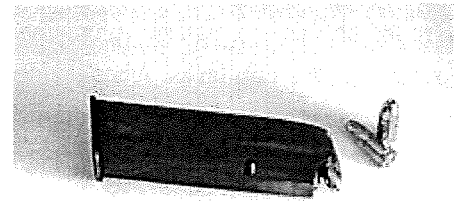
EXHIBIT 7

WIKIPEDIA

Magazine (firearms)

A **magazine** is an ammunition storage and feeding device within or attached to a repeating firearm. Magazines can be removable (detachable) or integral (internal/fixed) to the firearm. The magazine functions by moving the cartridges stored within it into a position where they may be loaded into the barrel chamber by the action of the firearm. The detachable magazine is often colloquially referred to as a clip, although this is technically inaccurate.^{[1][2][3]}

Magazines come in many shapes and sizes, from tubular magazines on lever-action rifles that hold only a few rounds, to detachable box and drum magazines for automatic rifles and machine guns that can hold more than one hundred rounds. Various jurisdictions ban what they define as "high-capacity magazines".



A staggered-column 9×19mm Browning Hi-Power pistol box magazine; the top image shows the magazine loaded and ready for use while the lower image shows it unloaded and disassembled

Contents

Nomenclature

History

- First tubular
- Integral box
 - Clip-fed revolution
 - Magazine cut-off
- Final fixed-magazine developments
- Detachable box magazines

Function and types

- Tubular
- Box
 - Horizontal
 - Casket
- Rotary
- Pan
- Drum
 - Saddle-drum
- Helical

STANAG magazine

High-capacity magazines

See also

References

Further reading

External links

The new bolt-action rifles began to gain favor with militaries in the 1880s and were often equipped with tubular magazines. The Mauser Model 1871 was originally a single-shot action that added a tubular magazine in its 1884 update. The Norwegian Jarmann M1884 was adopted in 1884 and also used a tubular magazine. The French Lebel Model 1886 rifle also used 8-round tubular magazine.^[12]

Integral box

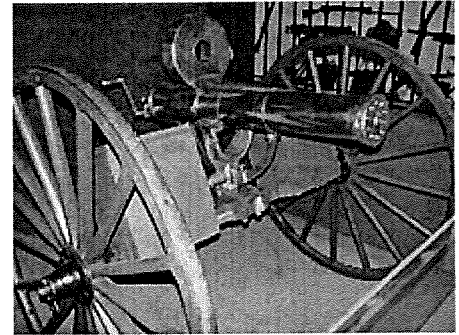
The military cartridge was evolving as the magazine rifle evolved. Cartridges evolved from large-bore cartridges (.40 caliber/10 mm and larger) to smaller bores that fired lighter, higher-velocity bullets and incorporated new smokeless propellants. The Lebel Model 1886 rifle was the first rifle and cartridge to be designed for use with smokeless powder and used an 8 mm wadcutter-shaped bullet that was drawn from a tubular magazine. This would later become a problem when the Lebel's ammunition was updated to use a more aerodynamic pointed bullet. Modifications had to be made to the centerfire case to prevent the spitzer point from igniting the primer of the next cartridge inline in the magazine through recoil or simply rough handling.^[13] This remains a concern with lever-action firearms today.

Two early box magazine patents were the ones by Rollin White in 1855 and William Harding in 1859.^[14] A detachable box magazine was patented in 1864 by the American Robert Wilson. Unlike later box magazines this magazine fed into a tube magazine and was located in the stock of the gun.^{[15][16]} Another box magazine, closer to the modern type, was patented in Britain (No. 483) by Mowbray Walker, George Henry Money and Francis Little in 1867.^[17] James Paris Lee patented a box magazine which held rounds stacked vertically in 1879 and 1882 and it was first adopted by Austria in the form of an 11mm straight-pull bolt-action rifle, the Mannlicher M1886. It also used a cartridge clip which held 5 rounds ready to load into the magazine.^{[13][18]}

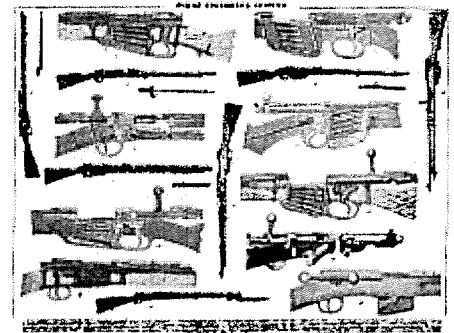
The bolt-action Krag-Jørgensen rifle, designed in Norway in 1886, used a unique rotary magazine that was built into the receiver. Like Lee's box magazine, the rotary magazine held the rounds side-by-side, rather than end-to-end. Like most rotary magazines, it was loaded through a loading gate one round at a time, this one located on the side of the receiver. While reliable, the Krag-Jørgensen's magazine was expensive to produce and slow to reload. It was adopted by only three countries, Denmark in 1889, the United States in 1892,^[19] and Norway in 1894.

Clip-fed revolution

A clip (called *chargers* by the British) is a device that is used to store multiple rounds of ammunition together as a unit, ready for insertion into the magazine or cylinder of a firearm. This speeds up the process of loading and reloading the firearm as several rounds can be loaded at once, rather than one round being loaded at a time. Several different types of clips exist, most of which are made of inexpensive metal stampings that are designed to be disposable, though they are often re-used.



Gatling gun with Accles drum, an odd loading device resembling a pan magazine in that the rotary follower was operated by the gun's action rather than a spring



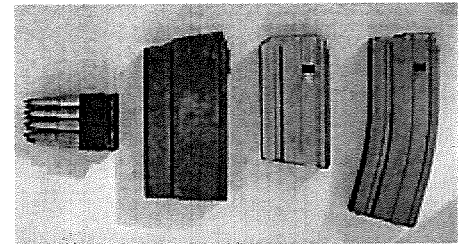
1905 Military Rifles magazines.

- 1 & 2: Mosin-Nagant
- 3 & 4: Lebel
- 5 & 6: Gewehr 1888
- 7 & 8: Mannlicher M1888
- 9 & 10: Lee-Metford
- 11 & 12: Dutch-Mannlicher M1895
- 13 & 14: Mauser M1893
- 15: Krag-Jørgensen
- 16: Schmidt-Rubin M1889

The Soviet SKS carbine, which entered service in 1945, was something of a stopgap between the semi-automatic service rifles being developed in the period leading up to World War II, and the new assault rifle developed by the Germans. The SKS used a fixed magazine, holding ten rounds and fed by a conventional stripper clip. It was a modification of the earlier AVS-36 rifle, shortened and chambered for the new reduced power 7.62×39mm cartridge. It was rendered obsolete for military use almost immediately by the 1947 introduction of the magazine-fed AK-47 assault rifle, though it remained in service for many years in Soviet Bloc nations alongside the AK-47. The detachable magazine quickly came to dominate post-war military rifle designs.^[26]

Detachable box magazines

The Lee–Metford rifle, developed in 1888, was one of the first rifles to use a detachable box magazine.^[27] However, the first completely modern removable box magazine was patented in 1908 by Arthur Savage for the Savage Model 99.^[28] Other guns did not adopt all of its features until his patent expired in 1942: It has shoulders to retain cartridges when it is removed from the rifle. It operates reliably with cartridges of different lengths. It is insertable and removable at any time with any number of cartridges. These features allow the operator to reload the gun infrequently, carry magazines rather than loose cartridges, and to easily change the types of cartridges in the field. The magazine is assembled from inexpensive stamped sheet metal. It also includes a crucial safety feature for hunting dangerous game: when empty the follower^[29] stops the bolt from engaging the chamber, informing the operator that the gun is empty before any attempt to fire.



(left to right)
M1 Garand 8-round en-bloc clip,
M14 20-round magazine,
M16 STANAG 20- and 30-round
magazines

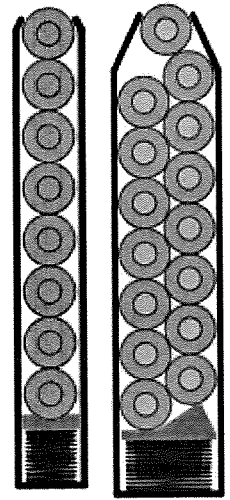
The first successful semi-automatic pistol was the Borchardt C-93 (1893) and incorporated detachable box magazines. Nearly all subsequent semiautomatic pistol designs adopted detachable box magazines.

The Swiss Army evaluated the Luger pistol using a detachable box magazine in 7.65×21mm Parabellum and adopted it in 1900 as its standard side arm. The Luger pistol was accepted by the Imperial German Navy in 1904. This version is known as Pistole 04. In 1908 the German Army adopted the Luger to replace the Reichsrevolver in front-line service. The Pistole 08 (or P.08) was chambered in 9×19mm Parabellum. The P.08 was the usual side arm for German Army personnel in both world wars.

The M1911 semi-automatic pistol set the standard for most modern handguns and likewise the mechanics of the handgun magazine. In most handguns the magazine follower engages a slide-stop to hold the slide back and keep the firearm out of battery when the magazine is empty and all rounds fired. Upon inserting a loaded magazine, the user depresses the slide stop, throwing the slide forward, stripping a round from the top of the magazine stack and chambering it. In single-action pistols this action keeps the hammer cocked back as the new round is chambered, keeping the gun ready to begin firing again.

During World War One, detachable box magazines found favor, being used in all manner of firearms; such as pistols, light-machine guns, submachine-guns, semi-automatic and automatic rifles. However, after the War to End All Wars, military planners failed to recognize the importance of automatic rifles and detachable box magazine concept, and instead maintained their traditional views and preference for clip-fed bolt-action rifles. As a result, many promising new automatic rifle designs that used detachable box magazines were abandoned.

The most popular type of magazine in modern rifles and handguns, a box magazine stores cartridges in a column, either one above the other or staggered *zigzag* fashion. This zigzag stack is often identified as a *double-column* or *double-stack* since a single staggered column is actually two side-by-side vertical columns offset by half of the diameter of a round. As the firearm cycles, cartridges are moved to the top of the magazine by a follower driven by spring compression to either a single feed position or side-by-side feed positions. Box magazines may be integral to the firearm or removable.



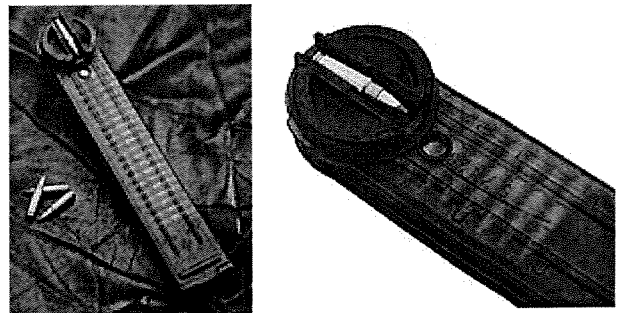
single column and staggered (aka *double-stack*) column detachable box magazines, both with single-feed lips.

- An **internal box**, **integral box** or **fixed** magazine (also known as a *blind* box magazine when lacking a floorplate) is built into the firearm and is not easily removable. This type of magazine is found most often on **bolt-action** rifles. An internal box magazine is usually charged through the action, one round at a time. Military rifles often use **stripper clips**, a.k.a. **chargers**, permitting multiple rounds, commonly 5 or 10 at a time, to be loaded in rapid sequence. Some internal box magazines use *en-bloc* clips that are loaded into the magazine with the ammunition and that are ejected from the firearm when empty.
- A **detachable box** magazine is a self-contained mechanism capable of being loaded or unloaded while detached from the host firearm. They are attached via a slot in the firearm receiver, usually below the action but occasionally to the side (**Sten**, **FG 42**, **Johnson LMG**) or on top (**Madsen machine gun**, **Bren gun**, **FN P90**). When necessary, the magazine can easily be detached from the firearm and replaced by another. This significantly speeds the process of reloading, allowing the operator quick access to ammunition. This type of magazine may be straight or curved, the curve being necessary if the rifle uses rimmed ammunition or ammunition with a tapered case. Detachable box magazines may be metal or plastic. The plastic magazines are sometimes partially transparent so the operator can easily check the remaining ammunition. Box magazines are often affixed to each other with clamps, clips, tape, straps, or built-in studs to facilitate faster reloading: see *jungle style*.

There are, however, exceptions to these rules. The **Lee–Enfield** rifle had a detachable box magazine only to facilitate cleaning. The Lee–Enfield magazine did open, permitting rapid unloading of the magazine without having to operate the bolt-action repeatedly to unload the magazine. Others, like the **Breda Modello 30**, had a fixed protruding magazine that resembled a conventional detachable box but was non-detachable.

Horizontal


The **FN P90 personal defense weapon** uses a horizontally mounted feeding system; the magazine sits parallel to the barrel, fitting flush with the top of the receiver, and the ammunition is rotated 90 degrees by a spiral feed ramp before being chambered. The **AR-57**, also known as the AR Five-seven, is an upper receiver for the AR-15/M16 rifle lower receiver, firing FN 5.7×28mm rounds from standard FN P90 magazines.



The P90's magazine has a capacity of 50 rounds, and it fits flush with the weapon's frame.^[31]

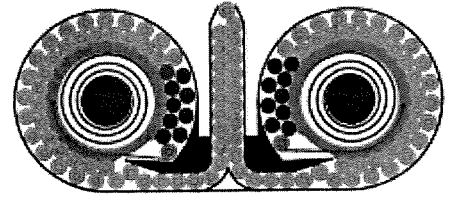
Casket

Another form of box magazine, sometimes referred to as a "quad-column", can hold a great amount of ammunition. It is wider than a standard magazine, but retains the same length. Casket magazines can be found on the **Suomi KP/-31**, **Hafdas C-4**, **Spectre M4**, **QCW-05** and on 5.45×39mm AK rifle derivatives. Magpul has been granted a patent^[32] for a **STANAG** compatible casket magazine,^[33] and such a magazine was also debuted by SureFire in December 2010, and is now sold as the **MAG5-60** and **MAG5-100 High Capacity Magazine (HCM)** in 60- and 100-round capacities, respectively, in 5.56mm for AR-15 compatible with M4/M16/AR-15 variants and other firearms that accept STANAG 4179 magazines.^[34] **Izhmash** has also developed a casket magazine for the **AK-12**.^[33]

 Media related to Drum magazines at Wikimedia Commons

Saddle-drum

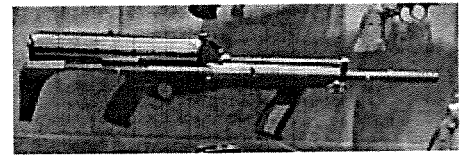
Before WWII the Germans developed 75-round saddle-drum magazines for use in their MG 13 and MG 15 machine guns. The MG 34 machine guns could also use saddle-drum magazine when fitted with a special feed cover. The 75 rounds of ammunition were evenly distributed in each side of the magazine with a central feed "tower" where the ammunition is fed to the bolt. The ammunition was fed by a spring force, with rounds alternating from each side of the double drum so that the gun would not become unbalanced.



Beta C-Mag double-drum magazine.

Helical

Helical magazines extend the drum magazine design so that rounds follow a spiral path around an auger-shaped rotating follower or *drive member*, allowing for large ammunition capacity in a magazine that can be adapted to increase ammo capacity with only a minor increase to the dimensions of an unloaded gun (compared to a regular box magazine of similar capacity). This type of magazine is used by the Calico M960, Bizon SMG, Long Wind CS/LS06 and KBP PP90M1.

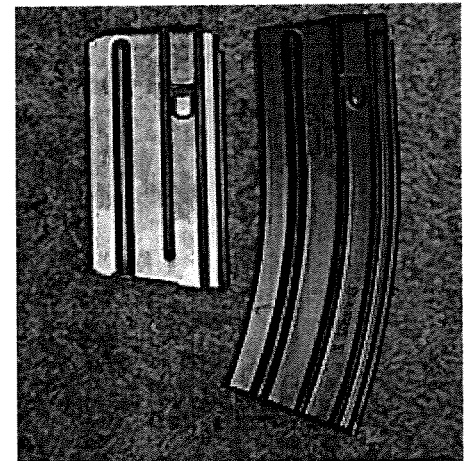


Calico pioneered the helical magazine design. Pictured is the company's M960 carbine.

STANAG magazine

A **STANAG magazine**^{[39][40]} or **NATO magazine** is a type of detachable magazine proposed by NATO in October 1980.^[41] Shortly after NATO's acceptance of the 5.56×45mm NATO rifle cartridge, Draft **Standardization Agreement (STANAG)** 4179 was proposed in order to allow NATO members to easily share rifle ammunition and magazines down to the individual soldier level. The U.S. M16 rifle magazine was proposed for standardization. Many NATO members, but not all, subsequently developed or purchased rifles with the ability to accept this type of magazine. However, the standard was never ratified and remains a 'Draft STANAG'.^[42]

The STANAG magazine concept is only an interface, dimensional, and control (magazine latch, bolt stop, etc.) requirement.^{[43][44]} Therefore, it not only allows one type of magazine to interface with various weapon systems,^{[43][44]} but also allows STANAG magazines to be made in various configurations and capacities.^{[43][44]} The standard STANAG magazines are 20, 30, and 40 round box magazines,^[44] but there are many other designs available with capacities ranging from 1 round^[45] to 60 and 100 round casket magazines,^{[46][47]} 90 round snail-drum magazines,^[48] and 100 round^[49] and 150 round double-drum magazines.^[50]



Two STANAG-compliant magazines: A 20-round Colt-manufactured magazine, and a 30-round Heckler & Koch "High Reliability" magazine.

High-capacity magazines

20. Military Small Arms Of The 20th Century, 7th Edition, 2000 by Ian V. Hogg & John S. Weeks, p.184
21. Military Small Arms Of The 20th Century, 7th Edition, 2000 by Ian V. Hogg & John S. Weeks, p.180
22. Chuck Hawks. "The 8x50R Lebel (8mm Lebel)" (http://www.chuckhawks.com/8mm_lebel.htm). *Chuckhawks.com*. Retrieved 2017-06-05.
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25. Rottman, Gordon L. (20 October 2013). "The Book of Gun Trivia: Essential Firepower Facts" (https://books.google.co.uk/books?id=-ZqtAAAAQBAJ&printsec=frontcover&dq=The+Book+of+Gun+Trivia:+Essential+Firepower+Facts&hl=en&sa=X&ei=H_UIVbxCltigBIPdgKAB&ved=0CCcQ6AEwAA#v=onepage&q=The+Book+of+Gun+Trivia:+Essential+Firepower+Facts&f=true). Bloomsbury Publishing. Retrieved 5 June 2017 – via Google Books.
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27. Military Small Arms Of The 20th Century, 7th Edition, 2000 by Ian V. Hogg & John S. Weeks, p.187
28. U.S. Patent 885,868 (<https://www.google.com/patents/US885868>), April 28, 1908, Improved Magazine, Inventor: Arthur W. Savage
29. The "follower" is the sheet metal part between the last cartridge and the spring. It might be made of or coated with other materials such as nylon or Teflon.
30. Weeks, John, *World War II Small Arms*, London: Orbis Publishing Ltd. (1979), p. 33.
31. Kevin, Dockery (2007). *Future Weapons*. New York: Berkley Trade. ISBN 978-0-425-21750-4.
32. "United States Patent: 9615588 - Dehiding tool" (<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITO&FF&u=/netahtml/PTO/search-adv.htm&r=1&p=1&f=G&l=50&d=PTXT&S1=505419.AP.&OS=APN/505419&RS=APN/505419>). *Patft.uspto.gov*. Retrieved 5 June 2017.
33. "Magpul Invents New Quad-Stack Magazine for ARs « Daily Bulletin" (<http://bulletin accurateshooter.com/2010/06/magpul-invents-new-quad-stack-magazine-for-ars/>). *bulletin accurateshooter.com*. Retrieved 5 June 2017.
34. Crane, David (December 3, 2010). "DR Exclusive!: SureFire MAG5-60 and MAG5-100 High Capacity Magazine (HCM) "Quad-Stack" AR Rifle Magazines: 60-Round/Shot and 100-Round/Shot AR (AR-15/M16) 5.56mm NATO Box Magazines for Significantly-Increased Firepower during Infantry Combat and Tactical Engagements of All Sorts" (<http://www.defensereview.com/dr-exclusive-surefire-60-shot-and-100-shot-ar-ar-15m16-5-56mm-nato-box-magazines-for-infantry-combat-and-tactical-engagements-meet-the-surefire-mag5-60-and-mag5-100-high-capacity-magazines-hcms/>). *DefenseReview.com*. Archived (<https://web.archive.org/web/20110104003941/http://www.defensereview.com/dr-exclusive-surefire-60-shot-and-100-shot-ar-ar-15m16-5-56mm-nato-box-magazines-for-infantry-combat-and-tactical-engagements-meet-the-surefire-mag5-60-and-mag5-100-high-capacity-magazines-hcms/>) from the original on January 4, 2011.
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36. Lee, Jerry (15 July 2013). "Gun Digest 2014" (https://books.google.co.uk/books?id=xaQtAAAAQBAJ&pg=PA61&lpg=PA61&dq=Spitalsky+Rotary+Magazine&source=bl&ots=qeDz7y4t4O&sig=ijwZaQZS2JSajFPaUexK-TkppRY&hl=en&sa=X&ved=0ahUKEwiAxouC7cPNAhUpDMAKHd_VAmMQ6AEIzAB#v=onepage&q=Spitalsky+Rotary+Magazine&f=false). Gun Digest Books. Retrieved 5 June 2017 – via Google Books.
37. U.S. Patent 502,018 (<https://www.google.com/patents/US502018>), Magazine Gun, Application date: April 10, 1889, Issue date: July 25, 1893, Inventor: Arthur W. Savage
38. "Photographic image" (<http://www.cairdpublications.com/scrap/armbitguns/images/Bren%20Guns.jpg>) (JPG). *Cairdpublications.com*. Retrieved 2017-06-05.
39. The M16, Gordon L. Rottman, © Osprey Publishing, 2011, Page 35-36
40. Future Weapons, Kevin Dockery, © Penguin, 2007, Page 125-126

- Difference Between a Magazine and a Clip - Picture (<http://www.minutemanreview.com/2008/09/clip-vs-magazine-lesson-in-firearm.html>)
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Retrieved from "[https://en.wikipedia.org/w/index.php?title=Magazine_\(firearms\)&oldid=824686589](https://en.wikipedia.org/w/index.php?title=Magazine_(firearms)&oldid=824686589)"

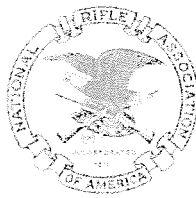
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EXHIBIT 8

NRA GUIDE TO THE BASICS OF PISTOL SHOOTING

Produced by the Education & Training Division
A Publication of the National Rifle Association of America



NRATM

Seventh Printing

Second Edition—November 2009
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NR40830ES30600 04/13

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Single-action semi-automatics require the hammer to be cocked manually for the first shot; the reciprocating slide cocks the hammer for all subsequent shots. Single-action semi-automatics offer the same short, crisp and relatively light trigger pull for the first shot and for all subsequent shots.

An alternative to the single-action semi-automatic is the *traditional double-action* pistol, which may also be described as a *double/single action*. In this type of mechanism, the first shot is fired with the hammer down, in the double-action mode—i.e., a long, relatively heavy trigger pull both cocks and releases the hammer—and subsequent shots are fired in the single-action mode. This allows the gun to be carried safely with a cartridge in the chamber and the hammer lowered, giving a rapid first shot.

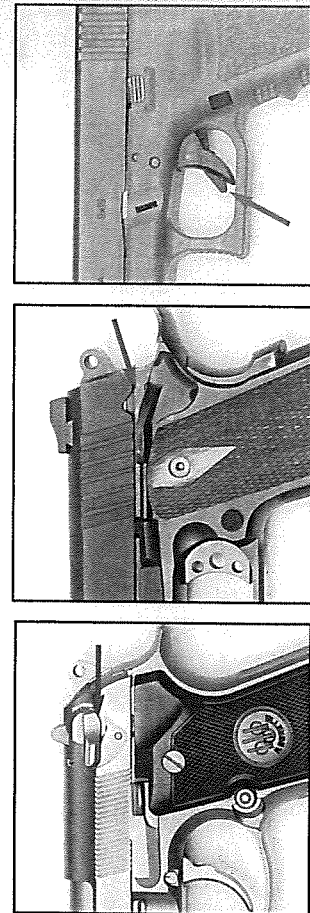
Some pistol users—particularly among law enforcement—wanted the rapid reloading and increased firepower of the semi-automatic, combined with the long, heavy pull of the double-action revolver. This pull was considered to be less conducive to an unintentional discharge than the short, light pull of the single-action or traditional double-action pistol. This led to the development of *double-action only (DAO)* semi-automatics, which, as their name implies, require a long double-action pull for every shot.

In addition to the broad categories above, a number of other pistol types incorporate novel designs, many of which seek to combine the fast and accurate first shot capability afforded by a single-action trigger pull with the safety of hammer-down carry. Some of these pre-cock a hammer or internal striker, giving a "semi-double-action" pull for the first shot. A few designs can be fired in the both the single-action and traditional double-action modes, affording the gun owner a choice of trigger types.

SEMI-AUTOMATIC SAFETY MECHANISMS

Semi-automatic pistol safety systems can assume a dizzying variety of forms. Probably the most familiar are the pivoting thumb levers located on the frame or slide. These are sometimes located on the left side only; however, on many recent designs, they are located bilaterally for ambidextrous use. While many thumb safeties are pivoted downward to disengage, some work in the opposite direction. Such safeties mounted on the frame typically block the sear, while those mounted on the slide usually prevent the hammer from contacting the firing pin.

A different type of safety system found on some traditional double-action pistols is the *hammer drop safety*, also known as a *decocker*. When this is engaged, the hammer falls harmlessly to its lowered position. With any



Semi-automatic pistols feature a variety of different safety mechanisms, including (l. to r.) slide-mounted decockers, frame-mounted safeties, and trigger safeties.

pistol of this type, firing a shot, or simply working the slide to feed a round into the chamber, leaves the hammer in the cocked position. Since such pistols are not designed to be safely carried with a round in the chamber and the hammer back, the hammer must be lowered before the pistol is holstered, placed in a pistol box, etc. The decocking mechanism safely accomplishes this. Double-action-only (DAO) semiautomatic pistols may have a thumb safety or, alternately, no active safety mechanism at all.

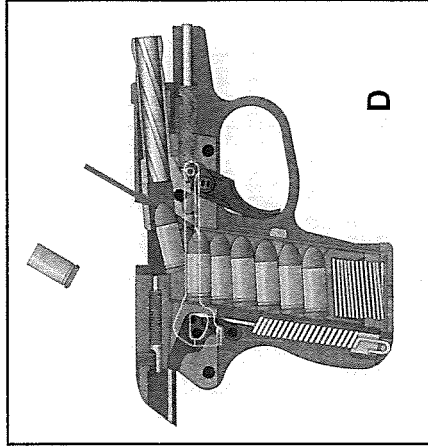
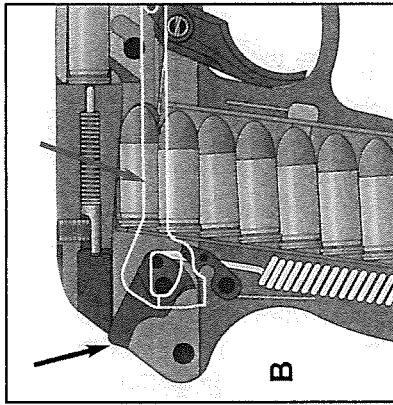
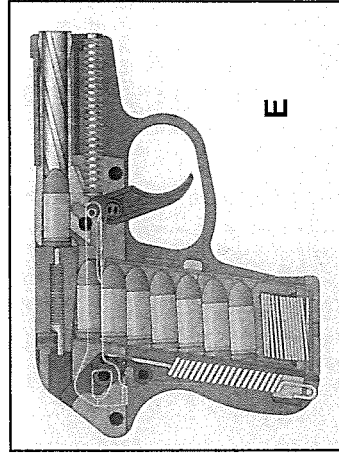
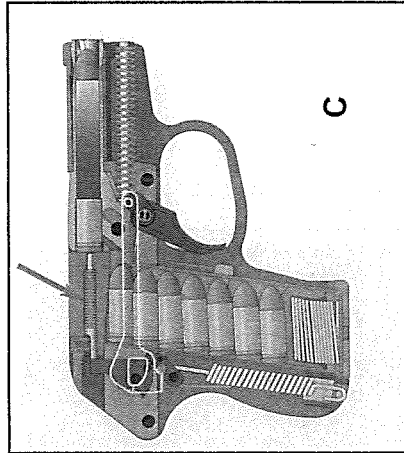
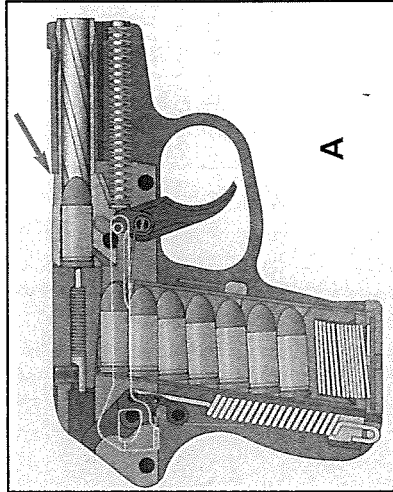
All semi-automatic pistols normally exhibit one or more *passive safety* systems, such as an inertia firing pin, a magazine disconnect (which prevents firing the round in the chamber if the magazine is removed), grip safety, or passive firing pin block that prevents forward firing pin travel unless the trigger is depressed.

SEMI-AUTOMATIC CYCLE OF OPERATION

All semi-automatic pistols have essentially the same cycle of operation. However, some steps in the cycle may not apply to all action types. For example, double-action-only (DAO) semi-automatic pistols do not have a "cocking" step.

Firing. Pulling the trigger releases an internal or external hammer that strikes the firing pin and fires the cartridge, or it may release a cocked, spring-powered striker or firing pin in the slide.

Unlocking. The pattern of locking is determined by the nature of the semi-automatic mechanism. With recoil-operated actions, mechanical camming



Semi-automatic cycle of operation, shown here with double-action-only pistol with a cartridge in the chamber and the hammer down in its ready position. (A). The barrel and slide are locked together by way of shoulder on chamber end of barrel (arrow). Pulling the trigger (B) causes the trigger bar (white outline, right arrow) to cock the hammer (left arrow). When the trigger falls, hitting the firing pin (arrow), firing the gun (C). As the slide recoils to the rear (D), the rear of the barrel drops down and unlocks from the slide, and the empty case is extracted and ejected. The slide quickly returns forward, and the breechface engages the top cartridge in the magazine, feeding it into the chamber (arrow). Finally, the slide returns fully forward, the fresh cartridge feeds fully into the chamber, the barrel and slide lock together, and the trigger bar resets (E).

surfaces serve to unlock the barrel from the slide after the two components have traveled rearward together a short distance. Gas-operated actions utilize gas pressure tapped from the bore to impel the slide rearward and unlock the action. Blowback-operated systems are by definition unlocked, so no unlocking is necessary. In such systems, the action opens simply when the gas pressure in the chamber and bore overcomes the forward force of the recoil spring and the inertia of the slide or bolt.

Extraction. A claw extractor mounted on the slide face engages the rim of the cartridge case and pulls it from the chamber after the action unlocks.

Ejection. As the slide moves smartly to the rear carrying a spent cartridge case, an ejector—usually a standing blade mounted in the frame—contacts the case head, throwing the case out of the action through the ejection port.

Cocking. At or near the extreme rearward limit of its travel, the reciprocating slide cocks the hammer or striker, which is held rearward against spring tension by the trigger mechanism.

Feeding. The compressed recoil spring pushes the slide rapidly forward, stripping a cartridge from the magazine and feeding it into the chamber.

Locking. With locked-breech semi-automatic designs, locking of the action occurs during the last fraction of an inch of forward motion of the slide. In the vast majority of designs, the rear of the barrel is cammed upward as it moves forward so that its locking surfaces engage the slide or frame, locking the action. With blowback-operated designs, no locking occurs; the momentum of the forward-moving bolt or slide is sufficient to fully chamber a cartridge and close the action (at which point the action is said to be *in battery*). Only the force of the compressed recoil spring, combined with the inertia of the bolt or slide, keeps the action closed.

EXHIBIT 9

COMPLETE GUIDE TO GUNS & SHOOTING

by
John Malloy

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About Our Covers

The exciting world of guns and shooting is filled with a variety of firearms for different purposes and games. Our covers show just a few of the types of guns you'll likely encounter as you journey into this wonderful field.

At the top is Ruger's Red Label 12-gauge over/under chambered for 2³/₄-inch shells. It sports a rare blued receiver and fixed Modified and Improved Cylinder chokes. This shotgun is a very popular choice for hunters and competitive shooters alike.

The revolver is Colt's premier model, the Python. Chambered for 357 Magnum, this wheelgun has been a favorite of sport shooters, law enforcement personnel and hunters for many years, and is well known for its silky-smooth action. Shown here is the 6-inch barrel model with target stocks.

At left center is the famous Browning Hi-Power autoloading pistol in 9mm Parabellum. With the grip, feel and reliability by which others are judged, the Hi-Power is one of the most popular pistols in the world. This example is shown with target sights.

At bottom is the Ruger M77R Mark II bolt-action rifle in caliber 30-06. Since its introduction in the late 1960s, the M77 rifle has appeared in many forms, in myriad chamberings, and is the rifle of choice for many hunters because it represents excellent value. It's shown here with a Redfield 2¹/₂-7x Tracker scope in Ruger mounts.

Photo by John Hanusin.

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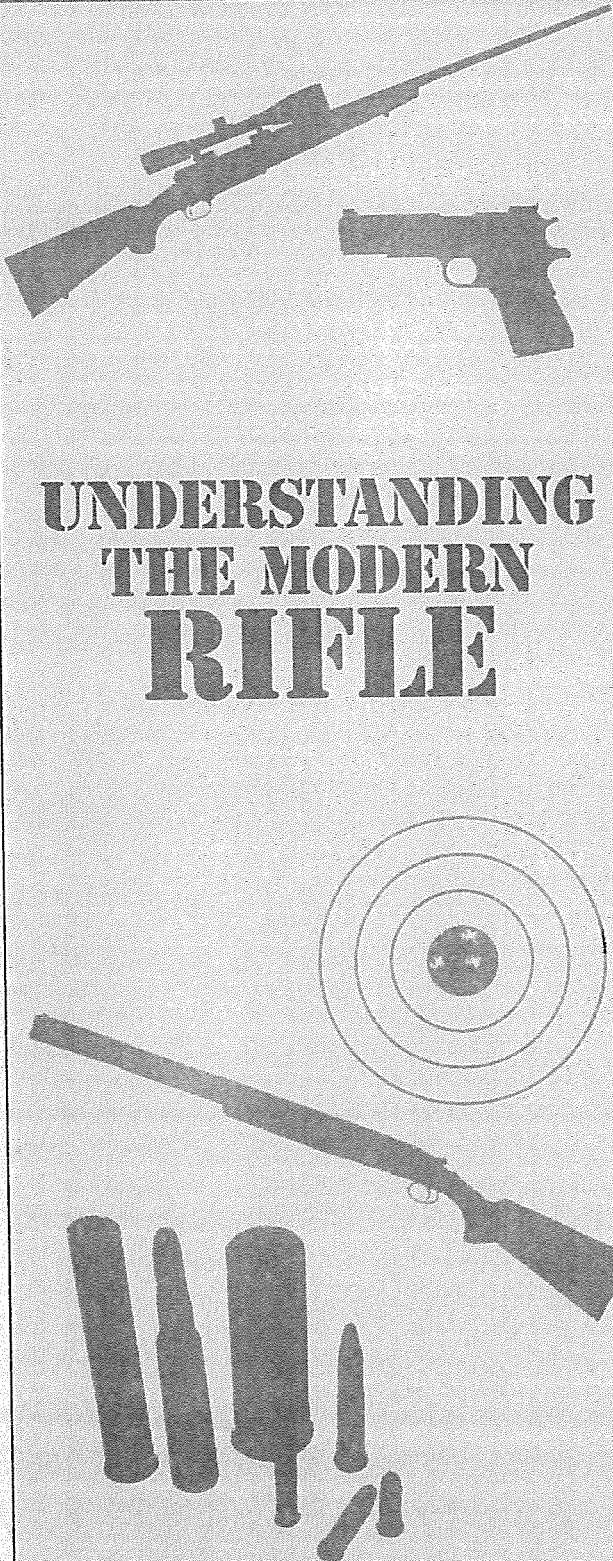
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CHAPTER THREE

UNDERSTANDING THE MODERN RIFLE



RIFLES HAVE A special place in American history. First used in Europe, probably before 1500, they were by 1700 fairly common in Germany and Switzerland, soon making their way to America with German gunsmiths settling in Pennsylvania. By 1735, rifles designed for American use—balanced for carrying, with small bores and long barrels—were becoming part of the American scene. With the expansion of the American frontier during Colonial days, the usefulness of the rifle became evident. A firearm that could deliver a small projectile with great accuracy was well suited for the wilderness. And, small bores required smaller amounts of lead and powder, hard items to acquire in the wilderness. This distinctly American style of rifle came to be called the “Kentucky” or “Pennsylvania” rifle.

Rifles played decisive roles in American history. They were instrumental during the American Revolution, accompanied Lewis and Clark on their expedition, and influenced both the War of 1812 and the Mexican War. The use of the rifle in the Civil War changed military tactics forever and helped expand the Western frontier. Rifles designed and used by Americans also influenced the outcomes of the two World Wars.

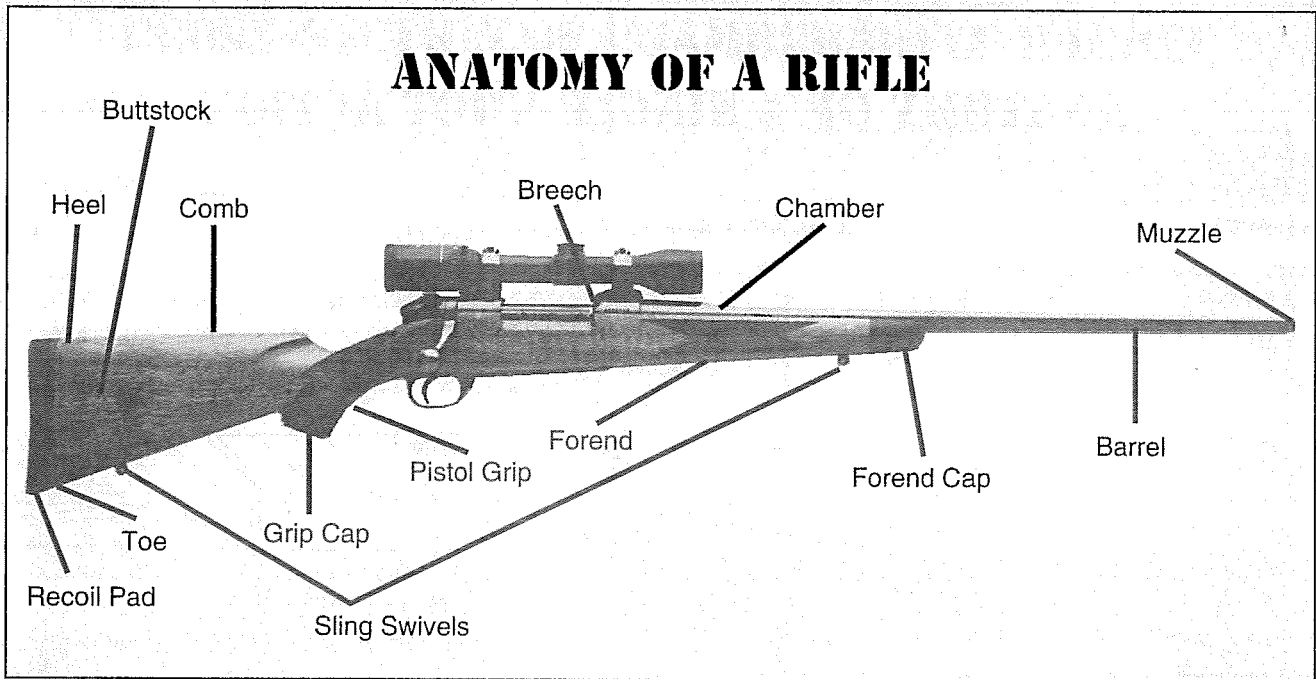
As special as rifles have been to our country on a historical level, they are special to many people on a personal level as well. For generations, a boy's first 22 was a rite of passage, a sign he was considered a responsible person by adults. That tradition has dwindled in our large metropolitan areas, but is still an American tradition nonetheless.

My first rifle was a Winchester Model 67, a manually cocked bolt-action single shot. I bought it with my lawn mowing money at age eleven, which was some time ago. To me, that little 22 seemed like an artillery piece. It seemed as if I were in control of more power than I had ever before imagined.

From that simple rifle, I learned a lot. Its few parts made me curious as to how a rifle worked, and knowing something about rifle parts is basic to understanding rifles. Since rifles are usually classified by action type, we must know something about the parts of a rifle in order to group them into categories of action types.

Rifles may also be classed according to the ammunition used—either rimfire or centerfire. Today's rimfires are all 22 caliber. The other classification, centerfire, consists of rifles that have greater power and range.

However, as we have already said, the usual way of classify-



ing rifles is by action type. Although they may differ in scale and details, rimfire and centerfire rifles use the same types of actions. Let us therefore define **action**: The breech mechanism that allows the shooter to load, shoot, and unload the rifle.

Parts of a Rifle

Since the parts of an action are critical to our classification, let's first go over all the parts of a rifle. The stock is the simplest part, so let's take that first.

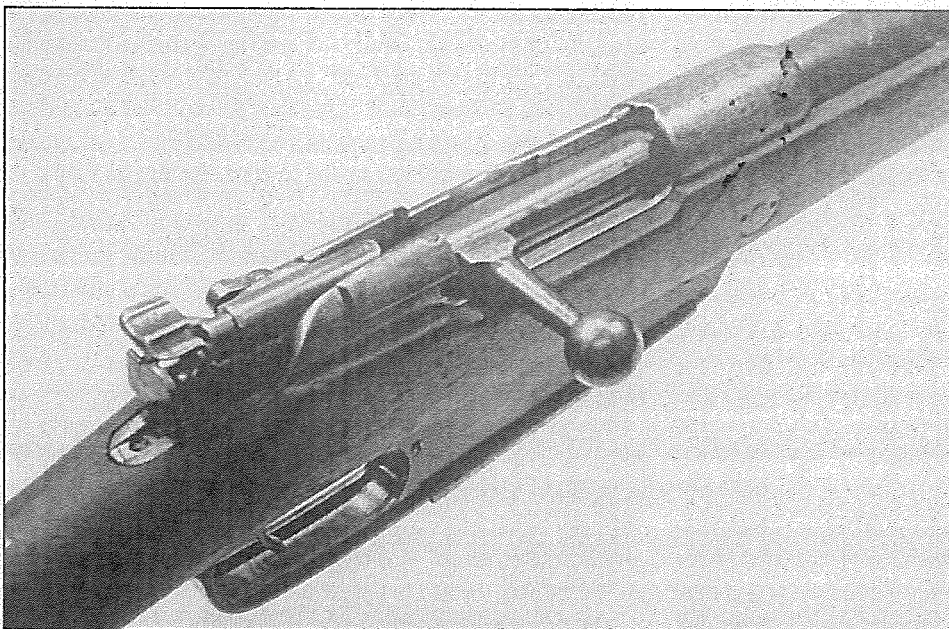
The Stock

For this discussion, we will assume the stock is made of wood. More and more stocks are being made of synthetic materials now, but most of the terminology still applies.

Beginning at the rear, the **butt** is the portion, generally flat or slightly curved, that fits against the shoulder. The top of the butt is the **heel** and the bottom is the **toe**. Going forward, the shooter's cheek rests on the **comb** of the stock. Continuing forward, the stock becomes small. This is the **small** of the stock, or more commonly, the **grip**. If the top and bottom lines are straight, it is called a **straight grip**. If the bottom line curves like the grip of a pistol, it is called a **pistol grip**.

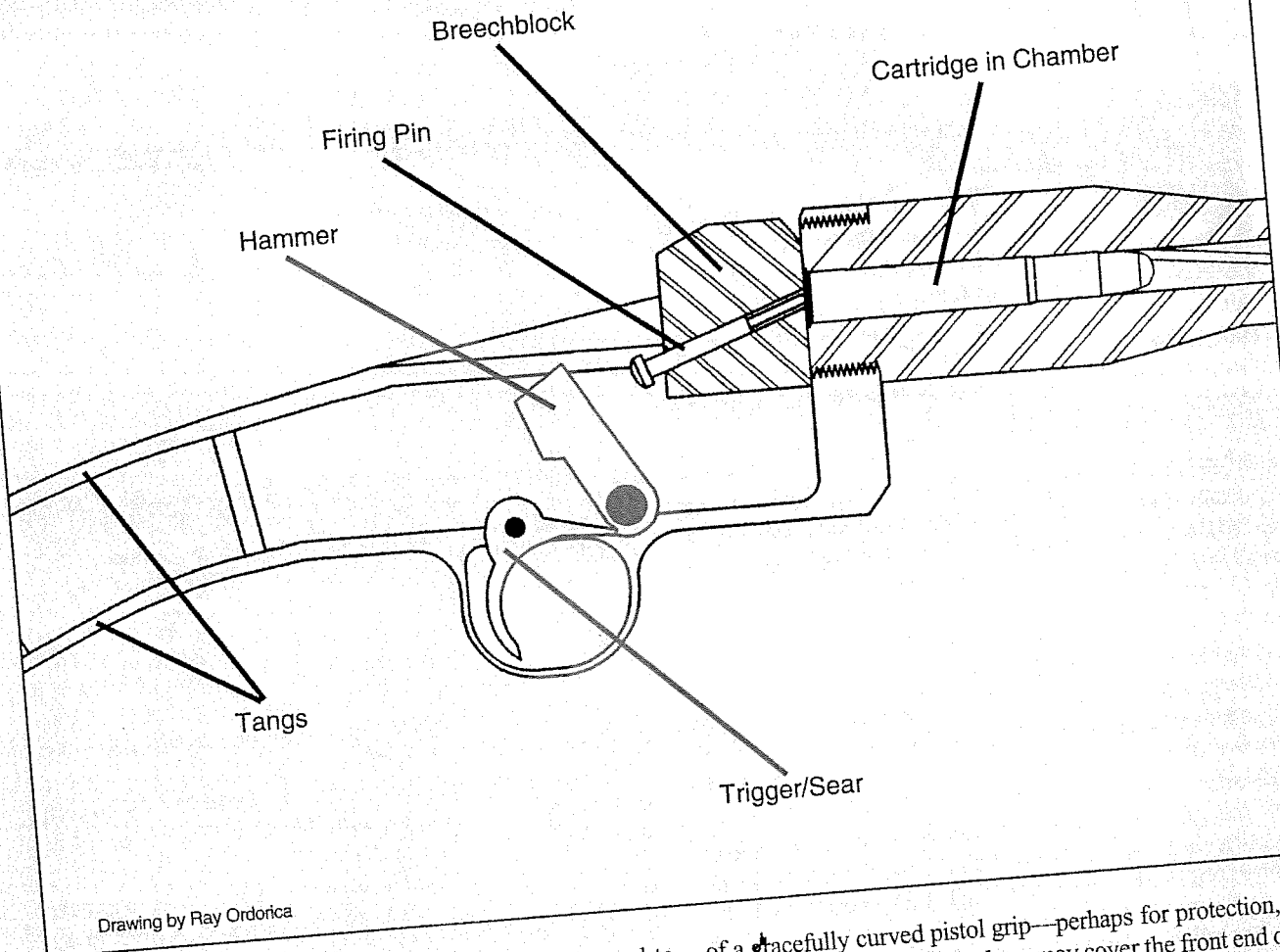
Continuing forward, we come to the **forend** or **forearm**. In some cases, it is a continuation of the same piece of wood. In others, it is a separate piece of wood.

Now we need to address a question that is not easy to answer. When is it correct to use "forend" and when is it correct to use "forearm?" The NRA basic handbooks use the term "forend"



This close-up shows the bolt and receiver of a German 1888 Commission bolt-action rifle.

ANATOMY OF A SINGLE SHOT ACTION



Drawing by Ray Ordorica

when it is a continuous piece of wood; "forearm" is used to define the separate front piece of a two-piece stock. If you are taking an NRA course, by all means keep your instructor happy by using the terms in this fashion. Be aware, though, that some authorities use the two terms in exactly the opposite manner. Many use them interchangeably.

Until I began writing this, I really was not sure how I used these two terms. I found that, when speaking, I tended to use the terms interchangeably. When writing, I generally used "forearm" for all cases.

Some rifles based on modern military patterns may have features other than those we've discussed. They may have a completely separate pistol grip, or a buttstock that folds for compactness. Some hunters, including Florida Governor Lawton Chiles, use such rifles for hunting because of ease of transport. However, it is the traditional stock we will deal with in this book.

Attached to the stock may be a number of items. A **buttplate** generally covers the butt to protect the wood from cracking or splitting. Some centerfire rifles have substantial recoil and may have a rubber **recoil pad** attached. A **grip cap** may be at the end

of a gracefully curved pistol grip—perhaps for protection, perhaps for aesthetics. A **forend cap** may cover the front end of the stock. In most cases, I think a forend cap is primarily used for looks, but many feel that covering the grain of the wood here deters moisture from entering and thus prevents the wood from warping.

Sling swivels may be installed to allow the use of a sling or carrying strap. On target rifles, an **accessory rail** or **adapter** in the forend allows the use of a hand stop or palm rest.

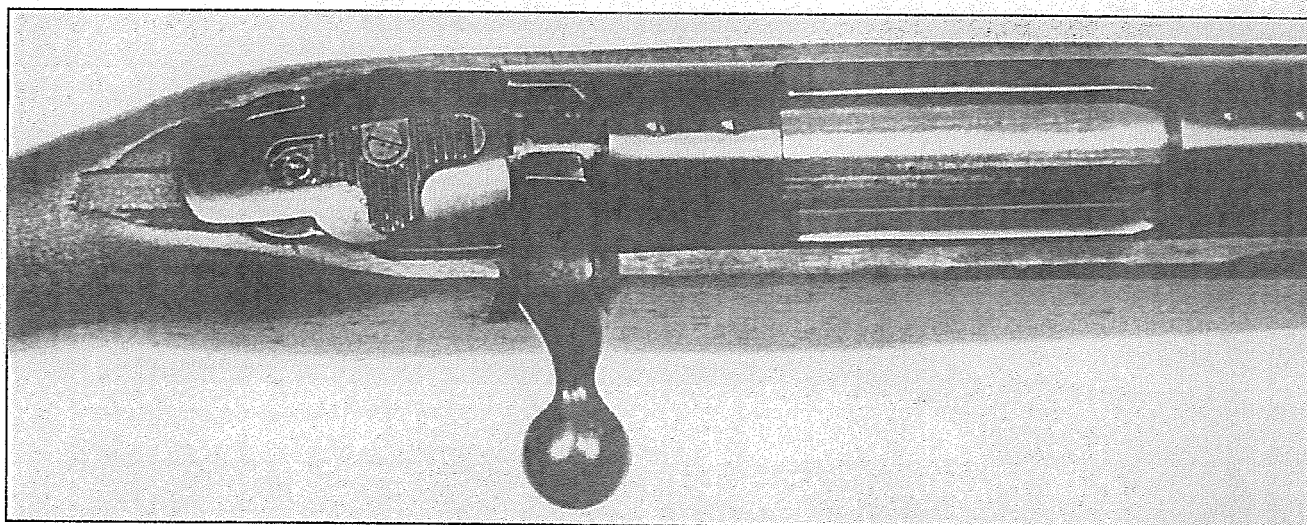
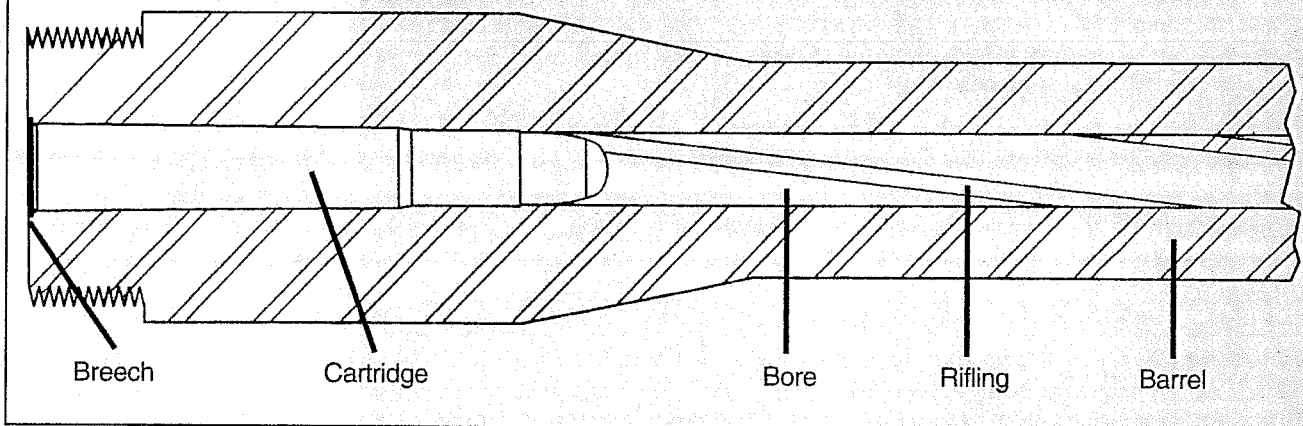
The Barrel

The barrel is the hollow steel tube into which the cartridge is inserted and through which the bullet passes on its way to the outside world.

The hole through the center of the barrel is called the bore. Spiral grooves are cut into the bore to impart a rotation or "spin" to the bullet as it travels through the bore. The grooves are called, logically enough, **grooves**. The highs between the groove bottoms are called **lands**. This combination of lands and grooves is called "rifling," which of course gives a rifle its name.

The rifling curves either to the left or right going through

CROSS-SECTION OF CHAMBER/RIFLE BARREL



Become familiar with your rifle's safety and how it works. This bolt-action 308-caliber Mossberg rifle has a sliding safety on the rear of the bolt.

bore. In almost all cases, this curve is constant. At some predetermined point in the bore, the rifling will make one full rotation. The distance at which this occurs is usually determined by the manufacturer, suited for the cartridge used, and is generally an even number of inches. Thus, we talk of the *twist* of the rifling. For example, a rifle may have a twist rate of one turn in 10 inches, or 1:10.

The rear of the barrel is the *breech*. At the breech, the rifle's bore is enlarged to form a *chamber* which allows insertion of the cartridge for which the rifle is designed or chambered.

If a rifle barrel has the same outside diameter for its entire length (some target rifles do), it is said to be a straight, untapered barrel. Most barrels are smaller at the muzzle end than at the breech. This reduction is accomplished usually by tapering the barrel, sometimes by stepping it, and sometimes by a combination of steps and taper.

The front of the barrel is the *muzzle*. The metal of the muzzle end of the barrel may be crowned, curved both toward the bore and the outside, or countersunk. This crowning protects the rifling and also has a positive effect on accuracy. Items such as sights or bands also may be installed on the barrel.

The Action

The action of a modern rifle is the combination of moving parts that allows a shooter to load, fire and unload the rifle. All rifles have a *receiver*, a metal frame onto which all the other parts are attached. All rifles have this in common: A way to open the action, place a cartridge into the chamber and close the bolt or breechblock. When the rifle is thus loaded, a trigger mechanism can release the hammer or striker mechanism, causing the firing pin to strike the primer of the cartridge.

In addition, most rifles have a *magazine*. This is a device that stores ammunition and allows individual cartridges to be fed automatically into the chamber. In addition, every rifle has some sort of mechanical safety device, which may be of a number of different types. If the design permits, the safety should be engaged whenever a rifle is loaded or unloaded.

Rifles are primarily classified by action type. The actions of modern rifles fall into six main categories: bolt action, slide (pump) action, lever action, semi-automatic, hinge (breakopen) action, falling block action.



Bolt-action rifles are still seen in High Power Rifle matches. Here, the writer squeezes off a shot from a 1903A3 Springfield during the standing stage.

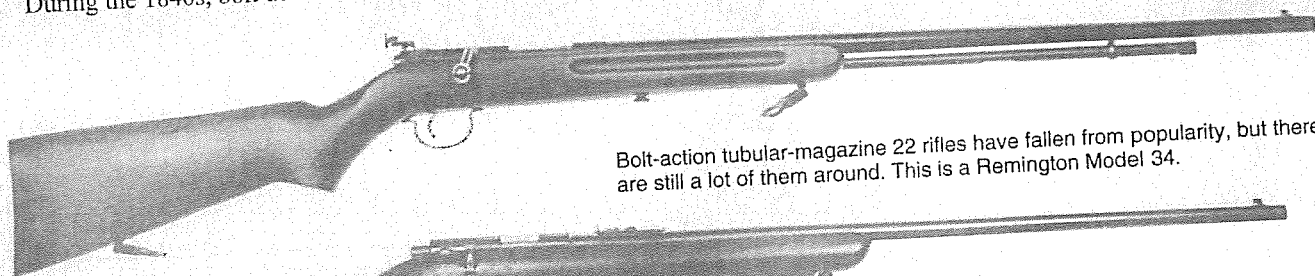
Bolt Action

The bolt-action rifle is probably the most common type of rifle used in America. It is so named because the bolt resembles the common turning door bolt which was in use for some time before the concept was applied to firearms.

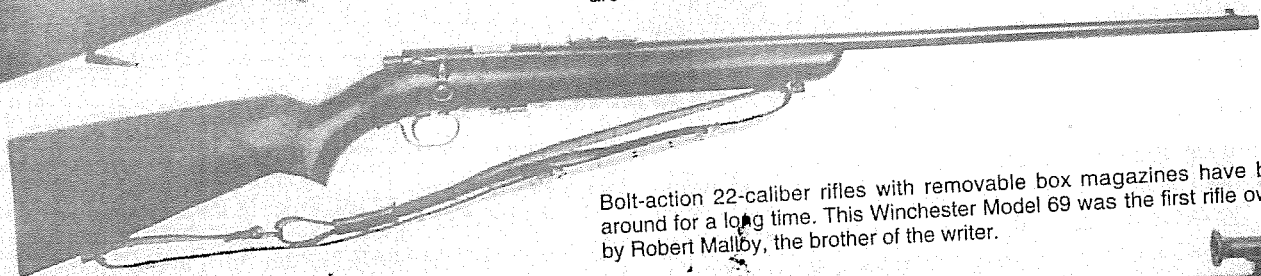
During the 1840s, bolt-action rifles were in common use in

Europe in the form of the Prussian Needle Gun. This early form of bolt action used a paper cartridge and did not seal well at the breech. Thus, soldiers got a puff of powder gas coming back at them with each shot. Still, this inefficient breechloader was very successfully used against military muzzleloaders of the day.

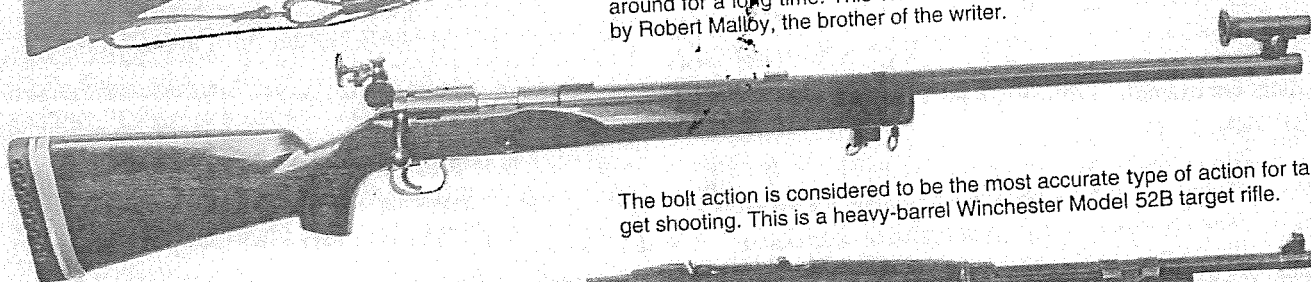
The prize for the first bolt action to use metallic cartridges



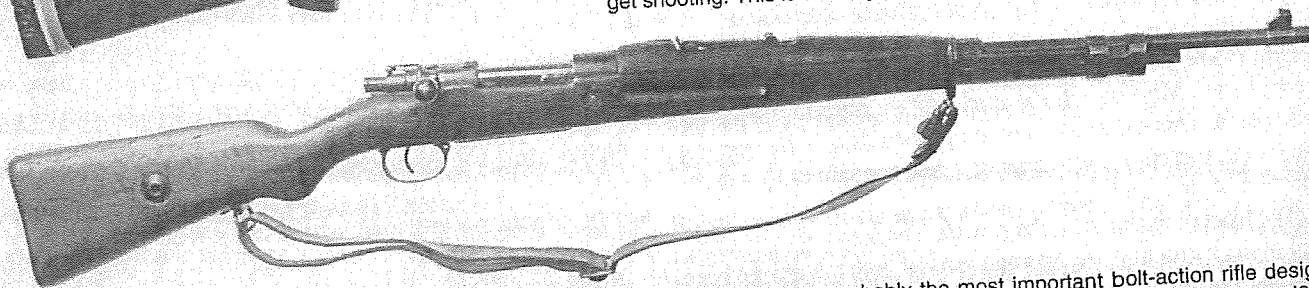
Bolt-action tubular-magazine 22 rifles have fallen from popularity, but there are still a lot of them around. This is a Remington Model 34.



Bolt-action 22-caliber rifles with removable box magazines have been around for a long time. This Winchester Model 69 was the first rifle owned by Robert Malloy, the brother of the writer.

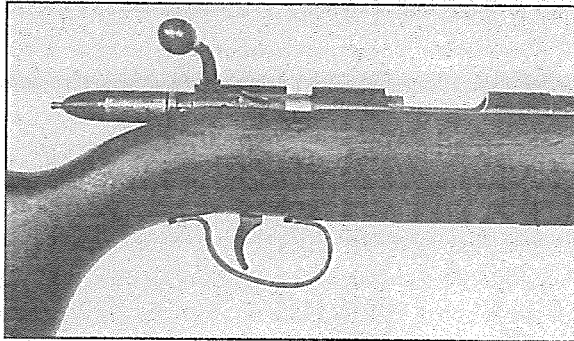


The bolt action is considered to be the most accurate type of action for target shooting. This is a heavy-barrel Winchester Model 52B target rifle.

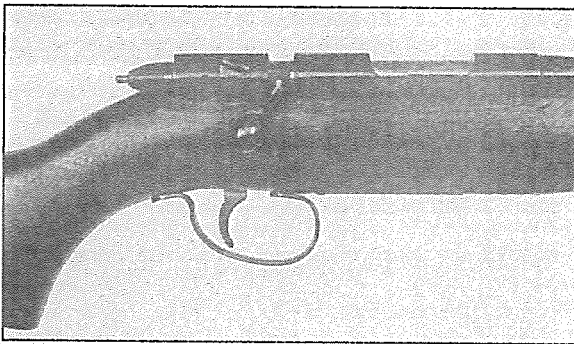


The Mauser '98 was probably the most important bolt-action rifle design ever produced. Many other designs are modifications of the Mauser '98. The basic design has a non-detachable magazine and can be loaded with single cartridges or from a stripper clip.

BOLT-ACTION SINGLE SHOT



A bolt-action rifle, action open.



A bolt-action rifle, action closed.

Bolt-action single shot rifles include two types: the least expensive beginner's rifles, usually 22s, and the most expensive expert's target rifles. The least expensive, because machining is simpler without a magazine cut in the receiver; target rifles, because the receiver is stiffer and flexes less without a magazine cut.

To load:

1. Open the bolt.
2. Insert a cartridge into the chamber.
3. Close the bolt.

Some very inexpensive rifles require manually pulling back the cocking piece at the end of the bolt, an additional step before shooting. If the rifle has an automatic safety, the safety will be on when the bolt is closed and must be taken off to fire. Recall, however, that in Chapter 2 we agreed the safety is only a mechanical device that supplements safe gun handling.

To unload:

1. Open the bolt. The cartridge or empty case will be ejected.
2. Visually inspect the chamber to make sure it is empty.

BOLT-ACTION REPEATER WITH NON-REMOVABLE MAGAZINE

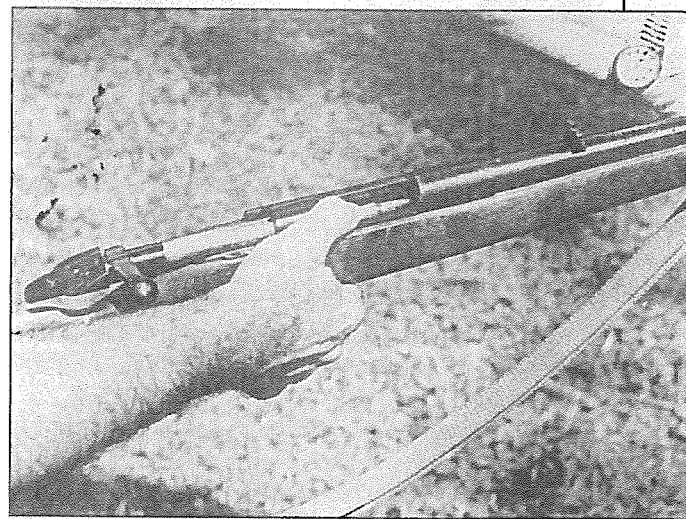
Examples of this type include most centerfire hunting and military surplus rifles.

To load:

1. Open the bolt.
2. Place a cartridge into the open action and press downward into the magazine. Repeat to load additional cartridges.
3. Close the bolt.

To unload:

1. Open the bolt. The cartridge or empty case in the chamber will be ejected.
2. If the floorplate can be removed, release it and empty the remaining cartridges from the magazine. If the floorplate cannot be removed, open and close the bolt repeatedly until the magazine is empty.
3. Visually check the chamber and magazine.



Most bolt-action centerfire rifles, here a 308-caliber Mossberg, load by pushing cartridges down into the magazine.

BOLT-ACTION REPEATER WITH REMOVEABLE MAGAZINE

Examples of this type are most box-magazine 22 rifles and some centerfire rifles such as the Savage 340 and Remington 788.

To load:

1. Open the bolt.
2. Remove the magazine.
3. Load the magazine.
4. Insert the loaded magazine back into the rifle.
5. Close the bolt.



Some bolt-action rifles, such as this 30-30 Stevens Model 325, have a removable box magazine.

To unload:

1. Open the bolt. The chambered cartridge or empty case will be ejected.
2. Remove the magazine.
3. Remove the cartridges from the magazine.
4. Visually check the chamber and magazine.

goes to a little-known American rifle, the Palmer carbine, patented in 1863. About a thousand of these 44 rimfire carbines were used by Union troops during the Civil War. By 1867, the Swiss were starting production of the Vetterli rifle, a somewhat more powerful 10.4mm (41-caliber) rimfire rifle. The Vetterli was the first bolt-action repeater.

In 1871, the single shot German Mauser, a powerful 11mm rifle using a centerfire blackpowder cartridge, became the first really successful bolt-action military rifle. In 1886, France adopted the Lebel, the first smokeless-powder bolt-action rifle.

The race was on. By 1891, every major world power had adopted a bolt-action repeating military rifle using smokeless powder cartridges except the United States. We corrected this

BOLT-ACTION REPEATER WITH TUBE MAGAZINE

These rifles are almost exclusively 22-caliber, and for many decades, they were very popular plinking and small game rifles. Recently, their popularity has waned compared to bolt-action box-magazine repeaters. Lots of them were made, however, and many models made by Winchester, Remington, Mossberg, Marlin, Savage and Stevens are still in use.

To load:

1. Open the bolt.
2. Release the inner magazine tube and pull it out until the cartridge loading port in the outer tube is open.
3. Load cartridges into the magazine through the opening.
4. Push the tube into its original position and secure it.
5. Close the bolt to position the first cartridge, then open and close it to chamber the first cartridge.

To unload:

1. Open and close the action until all cartridges have been ejected from the rifle.
2. With the action open, visually check the chamber and magazine.

With all tubular magazine 22-caliber rifles, it is possible to unload most of the cartridges by withdrawing the inner magazine tube completely and pouring out the cartridges. There is a reason this method is *not recommended*. It is possible for a cartridge to hang up in the magazine or feed mechanism when the plunger force is removed. Working the cartridges through the action reduces this possibility.

deficiency in 1892 with the adoption of the 30-40 Krag; then, a decade later, the 1903 Springfield.

Yet, the lever-action rifle was still the rifle of the American hunter. That situation did not change until after World War I. American "doughboys" had used bolt actions during that conflict and wanted similar rifles for hunting afterwards. Before too long, the bolt action became America's number one hunting rifle.

Bolt-action rifles are favored for their strength and their accuracy. All bolt-action rifles share the common "up-and-back, forward-and-down" operation of the bolt, but they come in many styles and types: bolt-action single shot; bolt-action repeater with removable or non-removable magazines; bolt-action with tube magazine.

Slide or Pump Action

The slide-action, or pump, rifle is operated by sliding (or pumping) the forearm of the stock back and forth. When doing so, rods connected to the forearm open and close the action. At the rear of the stroke, a cartridge case is ejected. At the forward stroke, a new round is chambered.

The slide-action rifle never attained the popularity of the bolt-action or lever-action types, but a lot of them have been made, most in 22-caliber. Because the hand that controls the trigger stays in place, leaving the other hand to operate the slide, the slide action is the fastest of all manually operated rifles. The forward movement of the forearm in closing the action also tends to help point the rifle toward the target. Thus, this type is favored by some for woods hunting, where a follow-up shot may be desired.

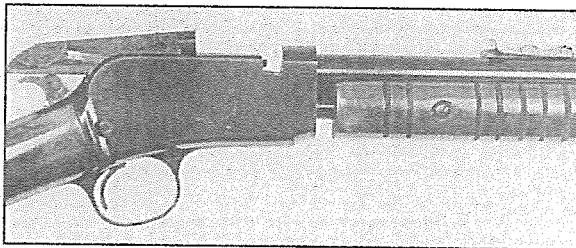
The slide action is moderately popular in America, but

hardly anywhere else. Here, the Colt slide-action Lightning rifle was introduced about 1885. There were three frames: small, medium and Express. Calibers ranged from 22 to the big 50-95.

In 1890, Winchester brought out its handy little 22 pump rifle. The rifle went through several modifications, ending as the Model 62. In 1959, Winchester discontinued the rifle and subsequently sold the machinery to Rossi of Brazil; the basic design is still in production as the Rossi Gallery model. Other slide-action 22s have been made by Winchester, Remington, Marlin, Savage, Stevens, Noble, H&R, and High Standard. Centerfire pump hunting rifles have been made by Remington, Savage, Marlin and Action Arms.

As with bolt actions, it is important to understand how to load and unload slide-action rifles. There are three basic types: rimfire with tube magazine; centerfire with tube magazine; centerfire with removable box magazine.

RIMFIRE SLIDE-ACTION REPEATER WITH TUBE MAGAZINE



A slide-action rifle, action open.

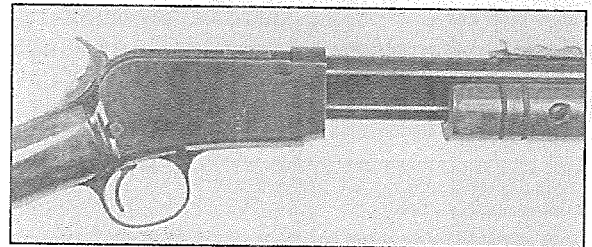
Most 22-caliber slide-action rifles have tubular magazines under the barrel. These magazines have a removable inner tube that contains a spring and plunger.

To load:

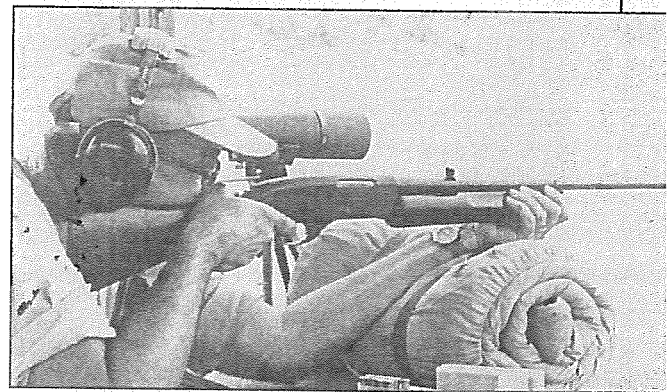
1. Open by pressing the action release and pulling the forearm to the rear.
2. Release the magazine and pull the plunger past the cartridge opening in the outer magazine tube.
3. Place cartridges in magazine opening.
4. Push inner magazine tube to original position and latch, then push the forearm forward to close it. A cartridge is now in the carrier mechanism.
5. Open and close the action to feed a cartridge into the chamber.

To unload:

1. Press the action release.
2. Open and close the action until all cartridges have been ejected from the rifle. (Some old-timers slap the stock



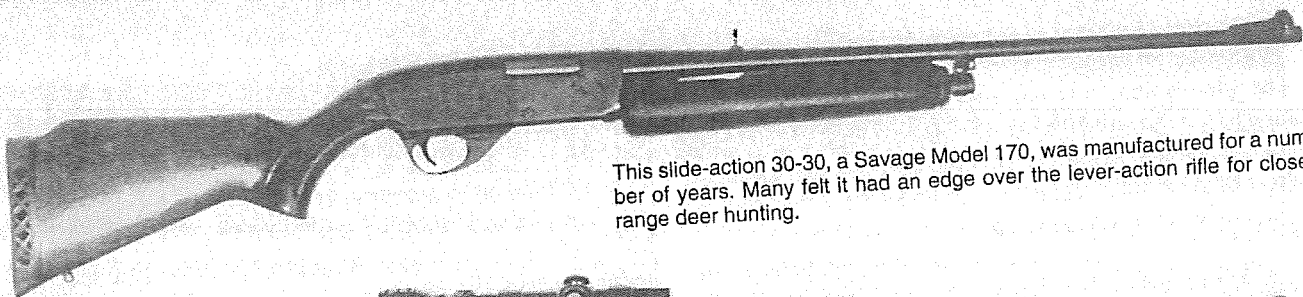
A slide-action rifle, action closed.



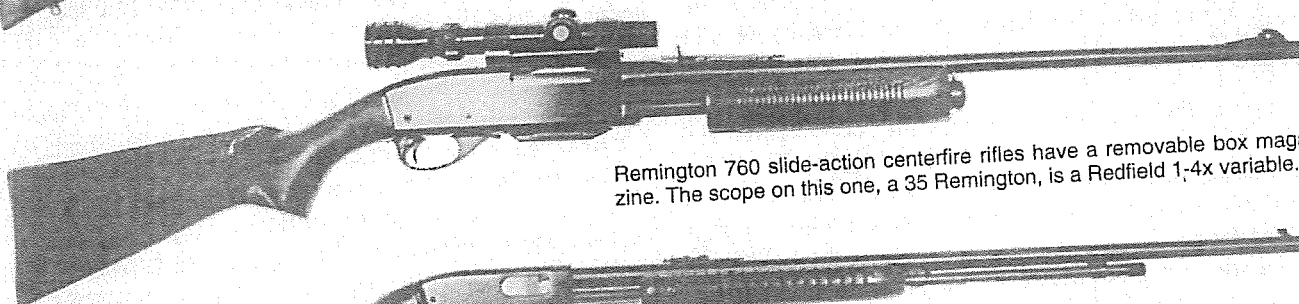
The slide-action rifle is almost always a hunting rifle. Here the writer sights in a Savage Model 170.

to jar the rifle, then work the action again at this point, to make sure a cartridge has not hung up in the magazine.)

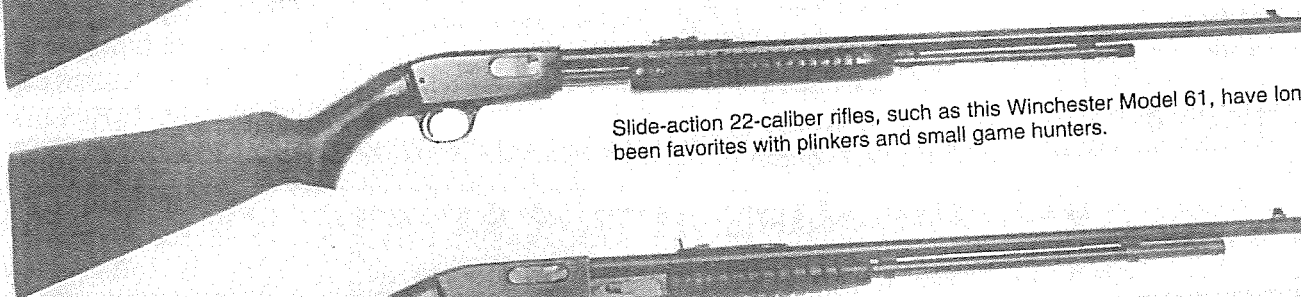
3. With the action open, visually check the chamber and magazine to be sure the rifle is completely unloaded.



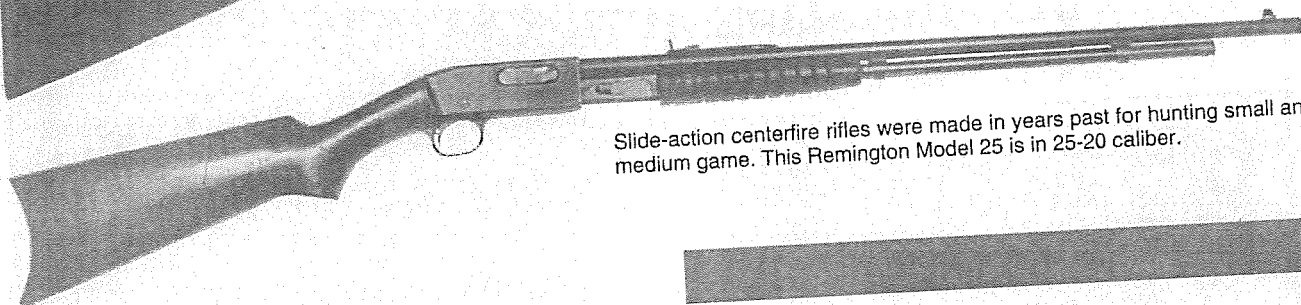
This slide-action 30-30, a Savage Model 170, was manufactured for a number of years. Many felt it had an edge over the lever-action rifle for close-range deer hunting.



Remington 760 slide-action centerfire rifles have a removable box magazine. The scope on this one, a 35 Remington, is a Redfield 1.4x variable.



Slide-action 22-caliber rifles, such as this Winchester Model 61, have long been favorites with plinkers and small game hunters.



Slide-action centerfire rifles were made in years past for hunting small and medium game. This Remington Model 25 is in 25-20 caliber.

CENTERFIRE SLIDE-ACTION REPEATER WITH REMOVABLE BOX MAGAZINE

The most common example in use today is the Remington Model 760.

To load:

1. Press the action release and open the action.
2. Remove the magazine and load cartridges into it.
3. Insert the magazine back into the rifle.
4. Move the forearm forward to close the action. This chambers the first cartridge.

To unload:

1. Press the action release and open the action.
2. Remove the magazine and take the cartridges out of it.
3. Visually inspect the chamber and magazine.

CENTERFIRE SLIDE-ACTION REPEATER WITH NON-REMOVABLE TUBE MAGAZINE

Examples still in fairly common use are the Savage 170 and the Remington 141.

To load:

1. Push cartridges into the magazine through the bottom of the receiver (M170) or the magazine tube opening forward of the receiver (M141).
2. Press the action release.
3. Open and close the action to feed a cartridge into the chamber. The magazine will now accept an extra cartridge.

To unload:

1. Press the action release.
2. Open and close the action until all cartridges have been ejected.
3. Visually check the chamber and magazine.

Lever Action

Although there are probably more bolt-action rifles in use in America than all other types combined, the lever action is still considered by many as the traditional American rifle.

The lever-action repeater was introduced to Americans during the Civil War in the form of the Henry and Spencer repeating rifles. After the Civil War, large numbers of these rifles went west and played a significant role in the westward expansion and settlement.

Oliver Winchester, a shirt manufacturer, headed up the company that manufactured the Henry. In 1866, he brought out an improved version under the name Winchester. When the Spencer company went bankrupt in 1868, Winchester bought the failed company in 1869 and discontinued the Spencer, leaving the Winchester without any serious competition for some years.

Before long, the Winchester design of an outside-hammer rifle with a tubular magazine under the barrel became the traditional lever-action rifle of America.

New Models 1873 and 1876 became popular, then were replaced by a later series of rifles designed by John M. Browning. These reached their peak of popularity in the Model 1894, which is still in production.

The Winchester lever action became the favored rifle of America not just because of availability, but because it worked well and suited the needs of the times. By the 1890s, other



One of the most famous lever-action rifles of all time is the Winchester '73. Here the writer shoots one in 32-20 caliber.

lever-action repeaters, such as the Marlin and the Savage, had entered the market.

Even so, military use of the lever-action rifle has been limited, though the Henry and Spencer rifles were decisive in the American Civil War. The history books show us that in every major engagement where Union troops were equipped with Spencer rifles, they were victorious. (Except, for some reason, in Florida.)

However, after the Civil War, the repeaters were sold as sur-

RIMFIRE LEVER-ACTION REPEATER WITH REMOVABLE TUBE MAGAZINE

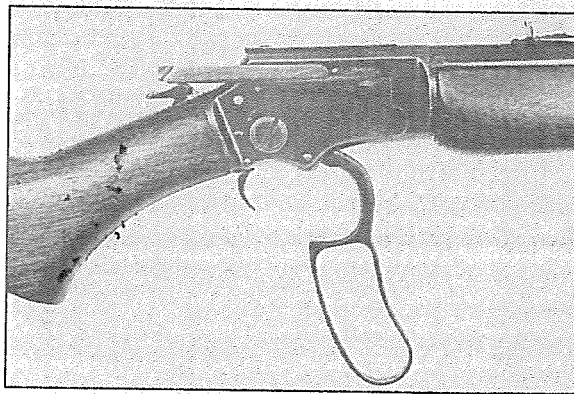
Common examples are the Marlin Model 39A and the Winchester 9422. Most lever-action 22-caliber rifles are of this type.

To load:

1. Open the action by pivoting the lever forward.
2. Remove the inner magazine tube enough so that the plunger clears the cartridge cutout in the outer tube.
3. Load cartridges into the cutout, then return the tube to its original position.
4. Close the action. A cartridge is now ready to be chambered.
5. Open and close the action. A cartridge is now in the chamber, and the rifle is ready to fire.

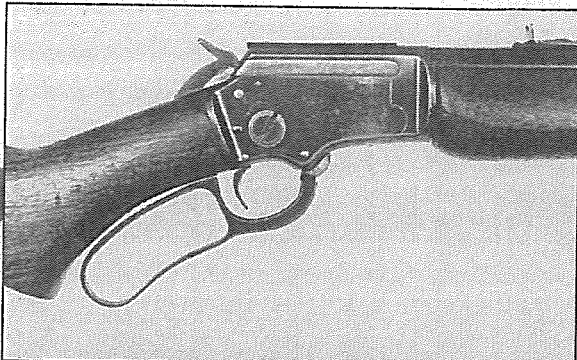
To unload:

1. Open and close the action until all cartridges have been ejected.
2. Visually inspect the chamber and magazine.



A lever-action rifle, action open.

A lever-action rifle, action closed.



plus, and United States troops were armed with a single shot rifle, the "trapdoor" Springfield. European military minds were equally slow to see the advantages of the repeating rifle. By 1877, most European countries were armed with single shot bolt-action rifles.

Despite this fact, an energetic Winchester salesman had sold the Turkish government 30,000 Winchester Model 1866 rifles. At the 1877 battle of Plevna, Turkish defenders faced a massed Russian army that was twice as large. The Turks issued 100 rounds with each Winchester. Also, before the battle, an extra box of 500 rounds was placed beside each defender. When it was over, the hail of bullets from the Winchesters had cut the Russian army to pieces. Over 30,000

Russian soldiers were killed during two mass assaults, and the lesson was not lost. The battle marked the end of the single shot military rifle, but it was replaced by the bolt-action repeater, not the lever action.

In America, by the turn of the century, three basic centerfire lever-action types had appeared and were in common use—the Winchester 1894, Marlin 1893 and hammerless Savage 1899. Variants of these designs are still in production as the Winchester 94, Marlin 336 and Savage 99. For a time, Mossberg also made a lever-action centerfire rifle of traditional design.

The Savage 99 with its rotary magazine has an advantage over the Winchester and Marlin designs. Because the tubular

CENTERFIRE LEVER-ACTION REPEATER WITH TUBE MAGAZINE

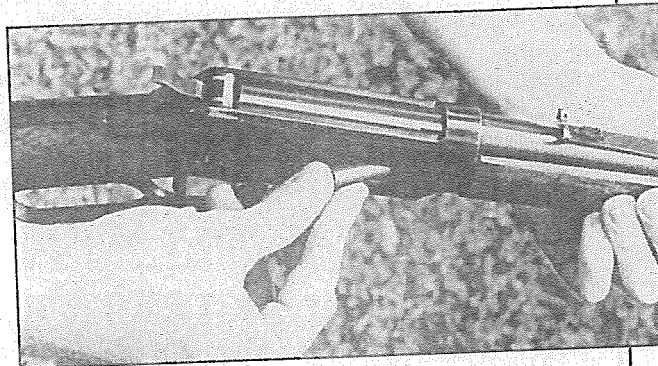
Most lever-action rifles such as the Winchester 94 and the Marlin 336, the common "30-30 deer rifles," are of this type, although they may be of calibers other than 30-30.

To load:

1. Load cartridges through the loading port.
2. Open the action.
3. Close the action.

To unload:

1. Open and close the action until all cartridges are out.
2. Visually inspect chamber and magazine.



Most centerfire lever-action rifles load through a loading port in the right side of the receiver. This is a 30-30 Winchester Model 94.

LEVER-ACTION REPEATER WITH REMOVABLE BOX MAGAZINE

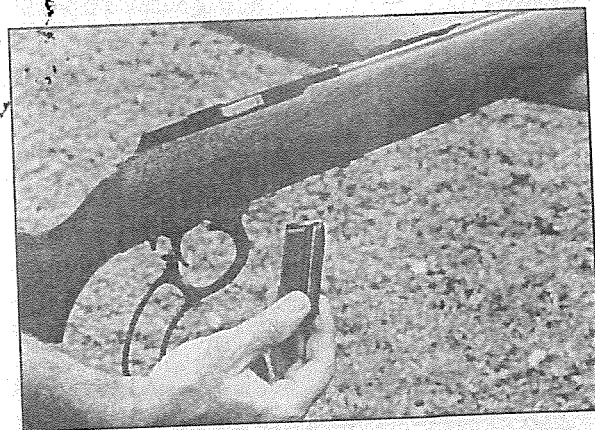
Centerfire rifles such as the Winchester 88, late-version Savage 99 with removable magazine, and Browning Lever Rifle generally represent this type. For a short time, Marlin also made rifles of this type, in 22 rimfire as well as 30 Carbine and 256 Winchester.

To load:

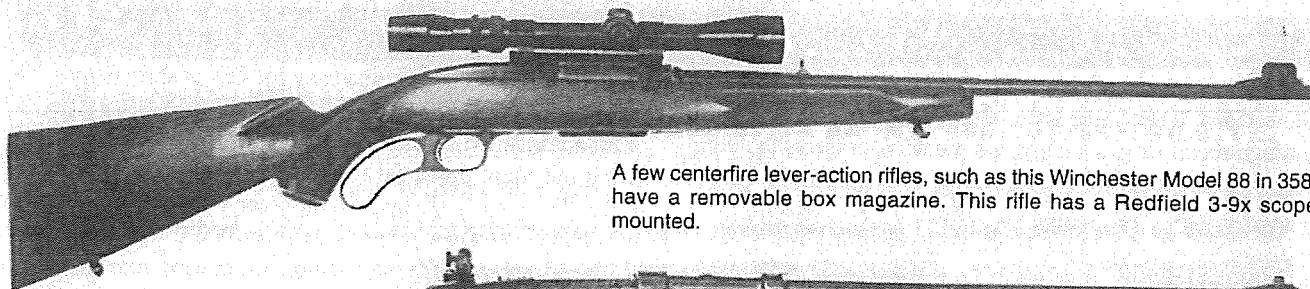
1. Open the action.
2. Remove the magazine and load cartridges into it.
3. Insert the magazine back into the rifle and close the action.

To unload:

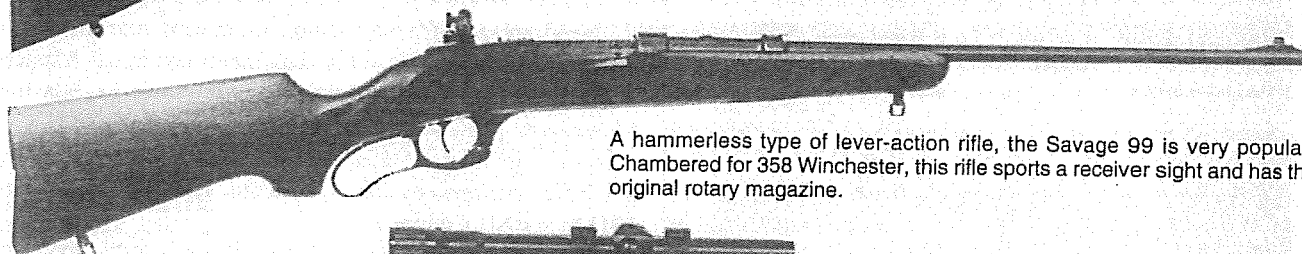
1. Open the action.
2. Remove the magazine and unload the cartridges from it.



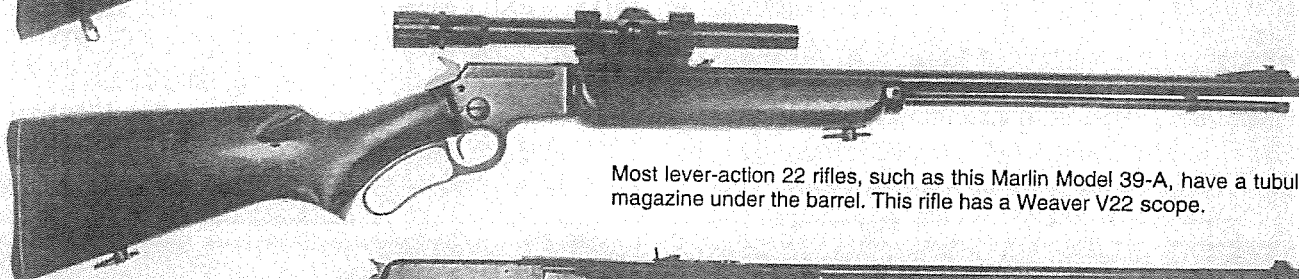
Only a few lever-action rifles load with a detachable box magazine. This is a 22-caliber Marlin Model 56.



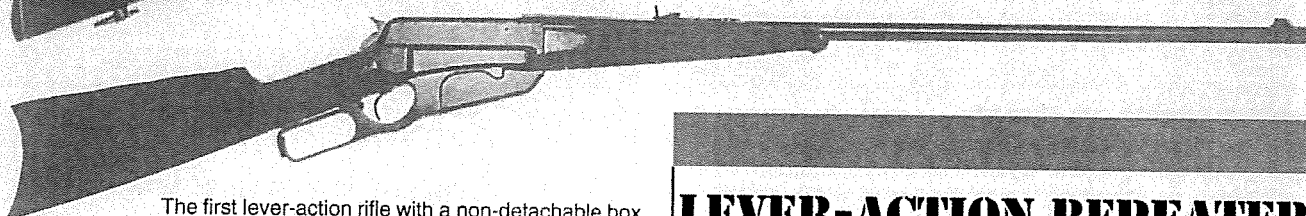
A few centerfire lever-action rifles, such as this Winchester Model 88 in 358, have a removable box magazine. This rifle has a Redfield 3-9x scope mounted.



A hammerless type of lever-action rifle, the Savage 99 is very popular. Chambered for 358 Winchester, this rifle sports a receiver sight and has the original rotary magazine.



Most lever-action 22 rifles, such as this Marlin Model 39-A, have a tubular magazine under the barrel. This rifle has a Weaver V22 scope.



The first lever-action rifle with a non-detachable box magazine was the Winchester Model 95. This one is chambered for 30-40 Krag.

magazine of the Winchester and Marlin put the nose of the cartridge's bullet against the primer of the one ahead, these designs are limited to the use of blunt-bullet ammunition. The Savage 99 can use pointed bullets, and its action is strong enough for high-pressure loads that the Winchester and Marlin can't handle.

The Winchester 88, introduced in 1955, was a hammerless box-magazine lever-action rifle capable of handling high-pressure cartridges and pointed bullets. It was dropped after twenty years, whereas the "traditional" Model 94 continued in production. In 1971, Browning tried a compromise—a modern lever-action box-magazine rifle with the traditional outside hammer. It found favor with many.

Because of their common use in Western movies, lever-action rifles are probably familiar even to those who have never shot one. They operate by forward and rearward rotation of an operating lever pivoted under the receiver. The operating lever under the grip is hinged in front of the trigger, and it forms the trigger guard of the rifle. When the lever is pivoted forward, the breech bolt is moved to the rear, opening the action. This opening action extracts the empty cartridge case from the chamber and positions the next cartridge. The rearward movement of the lever moves the bolt forward, chambers the cartridge, and closes and locks the action.

LEVER-ACTION REPEATER WITH NON-REMOVABLE BOX MAGAZINE

Rifles in this category are the Savage 99 with original rotary magazine and, to a lesser extent, the Winchester Model 95. Lots of 99s are still in the field, but most of the 95s rest in collections now. However, some of the Winchester still see service, and Browning made a number in replica form not too long ago, so they are worth considering here also.

To load:

1. Open the action.
2. For the 99, lay a cartridge in the open action and push it into the magazine until it clicks into place. Continue until the magazine is loaded. For the 95, place the base of the cartridge under the lips at the rear of the magazine, then rock the cartridge forward into the magazine. Continue until the magazine is loaded.
3. Close the action.

To unload:

1. Open and close the action until all cartridges have been ejected.
2. Visually check the chamber and magazine.

Semi-Automatic Action

Semi-automatic rifles use the energy of one shot to operate the action, making the rifle ready for the next shot. Either through recoil or gas energy, the mechanism ejects the empty cartridge case, feeds the next one and closes the bolt. Because they eliminate the manual operations of the previous types, semi-automatics are often called self-loaders or autoloaders.

Semi-automatic rifles seem very modern, and many are. However, many designs are very old, and this method of operation is much older than many people believe.

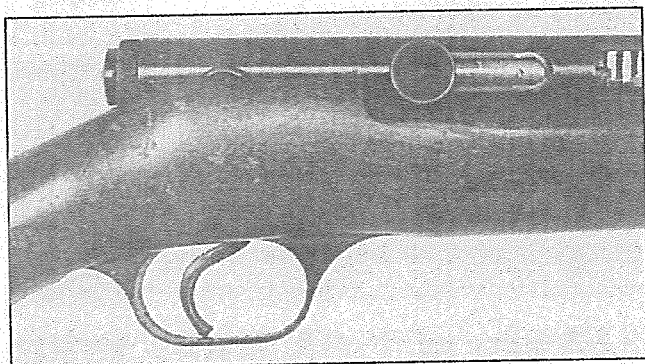
In the early 1880s, an American, Hiram Maxim, developed the first practical self-loading mechanism for firearms. By the early 1890s, both Maxim and another American, John M. Browning, had patented designs for gas- and recoil-operation machineguns. Semi-automatic pistols were already in commercial production by 1892.

In 1903, Winchester introduced a 22-caliber semi-automatic rifle for small-game hunting. Then in 1905, they brought out a centerfire version that was suitable for deer at short ranges. The following year, 1906, Remington introduced a more powerful semi-automatic rifle, their Model 8. This spurred Winchester to bring out more powerful versions of its design in 1907 and 1910. These early designs found favor with police as well as with hunters and saw limited service in WWI.

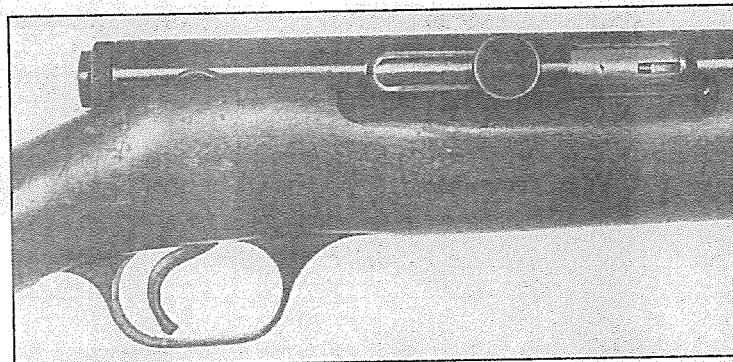
The advantages of the semi-automatic system were obvious to many military planners, and developments continued. Mexico officially adopted a semi-auto rifle for their military in 1908, the Mondragon. They were also used by German aviators in WWI.

In 1936, the United States adopted a semi-automatic rifle, the M1 Rifle developed by John C. Garand. This was followed in 1941 by the M1 Carbine.

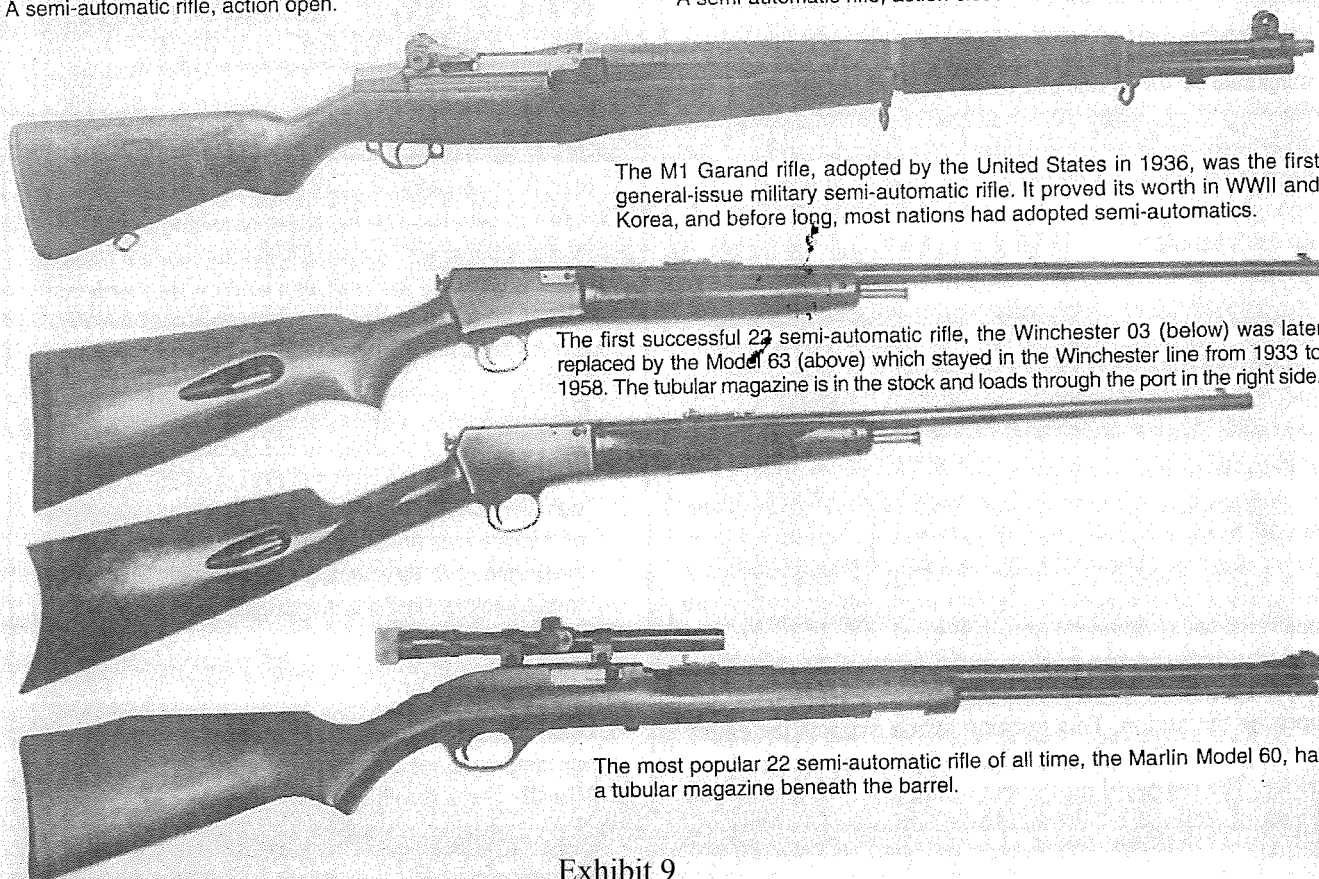
World War II and its aftermath saw tremendous development of semi-automatic military rifles. As had happened with the bolt



A semi-automatic rifle, action open.



A semi-automatic rifle, action closed.



The M1 Garand rifle, adopted by the United States in 1936, was the first general-issue military semi-automatic rifle. It proved its worth in WWII and Korea, and before long, most nations had adopted semi-automatics.

The first successful 22 semi-automatic rifle, the Winchester 03 (below) was later replaced by the Model 63 (above) which stayed in the Winchester line from 1933 to 1958. The tubular magazine is in the stock and loads through the port in the right side.

The most popular 22 semi-automatic rifle of all time, the Marlin Model 60, has a tubular magazine beneath the barrel.

RIMFIRE SEMI-AUTOMATIC WITH TUBE MAGAZINE

These rifles have a removable magazine tube with a spring and plunger. Location of the magazine may be under the barrel or inside the buttstock.

To load:

1. Open the action. In some early designs, the action will not stay open; such rifles must be loaded with the action closed, so extra care must be taken to make this operation safe.
2. Remove the magazine inner tube until the plunger has passed the cartridge cutout or loading port.
3. Load the cartridges through the loading port.
4. Push the inner tube of the magazine back into its original position and secure it.
5. Open the action and let it fly forward, feeding a cartridge into the chamber.

To unload:

1. Open and close the action until all cartridges have been ejected from the rifle.
2. Visually examine the chamber and magazine.



Many 22-caliber rifles with tubular magazines under the barrel have a loading port through which cartridges may be loaded.

SEMI-AUTOMATIC WITH REMOVABLE BOX MAGAZINE

Such rifles may be relatively simple 22-caliber arms, such as several Marlin models, Ruger's 10/22 or Survival Arms' AR-7. A number of centerfire arms have removable box magazines. Among those designed as sporting rifles, perhaps the most common now are the Browning BAR and Remington 7400. A number of rifles originally designed for military service are now used for hunting and target shooting, and are frequently encountered. Among them are the M1 Carbine, various semi-automatic offspring of the AK-47, Springfield M1A and Colt AR-15.

To load:

1. Open the action.
2. Remove the magazine and load it with cartridges.
3. Replace the magazine.
4. Close the action.

To unload:

1. Open the action.
2. Remove the magazine and unload the cartridges.
3. Visually inspect the chamber and magazine.



Early semi-automatic designs were very interesting and sometimes very strange. Military historian William Douglas explains the operation of a 30-06 Thompson Autorifle to the writer. This design was under development about the time of World War I.

action after World War I, American servicemen liked the semi-automatic rifles they had used and wanted similar rifles for hunting. New 22-caliber semi-automatic rifles were already on the market. Soon, Remington, Winchester, Ruger, Harrington & Richardson and Browning were supplying modern semi-automatic centerfire hunting rifles. Target shooters began to use rifles similar to military semi-automatics and, later, semi-automatic versions of selective-fire (semi- or full-automatic) military rifles.

The importation of large quantities of military surplus semi-automatic rifles during the 1980s and 1990s has spurred the interest in, and the use of, semi-automatic rifles.

There are a number of different types of semi-automatic rifles in common use: rimfire with tube magazine and centerfire with removable or non-removable magazine.

Clip vs. Detachable Magazine

Our remaining two types of rifles do not use magazines, so perhaps this is a good time to make a short side trip. Often times, removable or detachable box magazines are mistakenly called "clips." I have mentioned this not because I think it is a particularly good idea, but because it is common usage. Because the use of "clip" for "removable magazine" is so widespread, all shooters should be aware of it.

Actually, there are parts that can be correctly called clips, and I have mentioned them relative to the M1 and SKS rifles. Technically, clips are devices used to hold (or clip) cartridges together for inserting into a magazine, and there are two types.

Charger clip: The entire clip of cartridges goes into the magazine and actually becomes a part of the magazine as long as cartridges remain. The magazine will not function without the clip. Examples are the clips used to charge the magazine of the M1 Garand, a semi-automatic. Many early bolt-action military rifles—such as the German 1888 Commission rifle, Italian Carcano, Austrian 1895 straight-pull and French Berthier rifle—used charger clips. They are also called *en bloc* clips.

Stripper clip: These clips of cartridges are placed above the magazine into a slot which correctly positions them. Then the cartridges are pushed, or stripped, out of the clip into the magazine. Some examples are the 1903 Springfield rifle, German Mauser rifles, British SMLE and Russian SKS. The SMLE uses stripper clips to load a detachable magazine; however, most stripper clips are used to load a fixed magazine; the M14/M1A can be loaded from stripper clips directly into its (detachable) magazine.

Now you know the difference between clips and magazines, so let's continue with our discussion of action types.

SEMI-AUTOMATIC WITH NON-REMOVABLE MAGAZINE

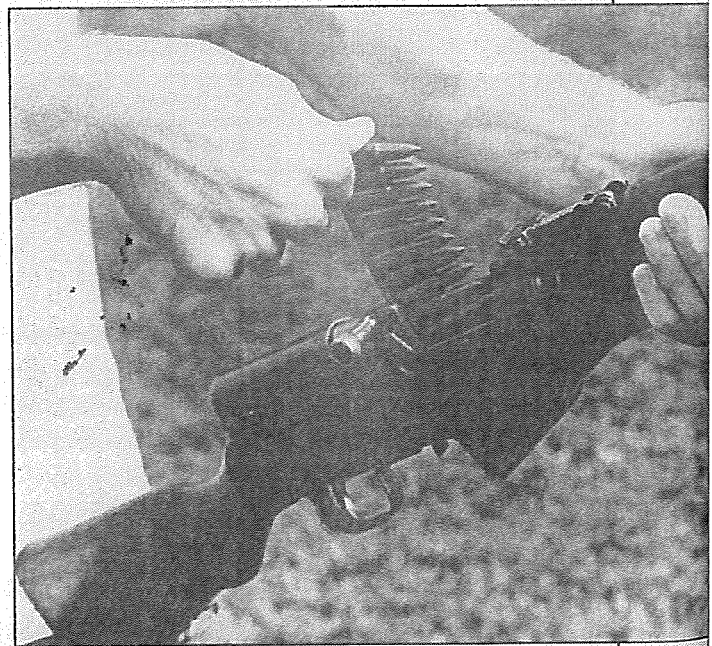
Common rifles in this category are the M1 Garand and the SKS rifles made in Russia and China.

To load:

1. Open the action by drawing back the operating handle until the bolt locks open.
2. For the M1, place a loaded clip of cartridges on the follower; press down until it latches. Release thumb pressure. Bolt will run forward, chambering a cartridge. For the SKS, push cartridges, one at a time or from a clip, into the magazine. Slightly pull back on the operating handle and release; the bolt will run forward, chambering a cartridge.

To unload:

1. For the M1, open the bolt to eject the chambered cartridge and firmly hold it back. Press the clip latch on the left side of the receiver to eject the clip and remaining cartridges. For the SKS, open the magazine box latch and empty cartridges from the bottom. Open the bolt to eject the round from the chamber.
2. Visually inspect the chamber and magazine.



A number of semi-automatic rifles have non-removable magazines. This 7.62x39mm SKS rifle can be loaded with single rounds or, as shown, from a stripper clip.