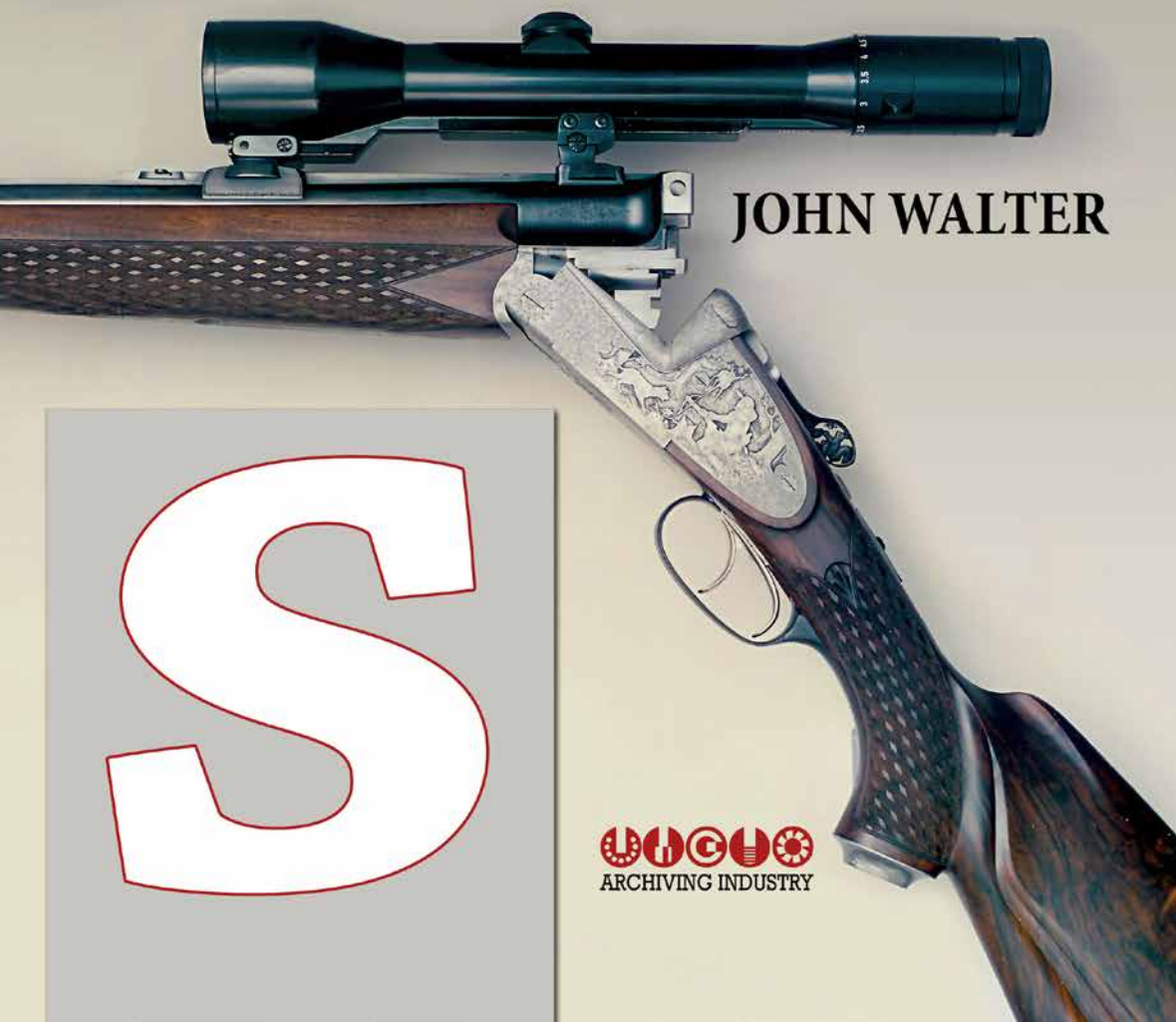


A CONCISE DICTIONARY OF
GUNS & GUNMAKERS

INVENTORS, PATENTEES, BRAND NAMES
AND TRADEMARKS



JOHN WALTER

S


ARCHIVING INDUSTRY

THE DIRECTORY: S-SYRETT

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- S Associated with small arms ammunition components made in Germany after 1940 by →Dynamit AG of St. Lambrecht.
- S *beneath a crown, above a number*. Applied by an Australian government arms inspector working in the Sydney depot in New South Wales. See also “British military inspectors’ marks”.
- S Found stamped into the heel of British Lee-Enfield ‘Short’ rifle butts, which were 2in shorter than the standard pattern.
- S Stamped under the butt of British →Lee Enfield rifles, near the socket, made for India Service with a spring washer on the stock retaining bolt.
- S *and a number*. Found on components of many British military firearms made during the Second World War, indicating a company operating in the ‘South’ (of Britain). The numbers identified individual companies. Typical examples associated with small-arms include ‘S 3’, →Adams Bros. & Burnley; ‘S 7’, →Auto Engineering (Croydon) Ltd; ‘S 30’, →Dashwood Engineering Ltd; ‘S 51’, →Holland & Holland Ltd; ‘S 54’, →Hydran Products Ltd; ‘S 63’, →Kork-n-Seal Ltd; ‘S 64’, the →Lamson Engineering Co. Ltd; ‘S 66’, →Lee Beilin Ltd; ‘S 67’, the →Lightfoot Refrigeration Co. Ltd; ‘S 68’, →Lines Bros. Ltd; ‘S 77’, the →Metal Box Company; ‘S 88’, the →National Cash Register Co. Ltd; ‘S 102’, the →Rolls Razor Co. Ltd; ‘S 103’, →Scoffin & Wilmot; ‘S 109’, the →Sterling Engineering Co.; ‘S 114’, →Trevor Stampings Ltd; ‘S 121’, →Vickers-Armstrongs Ltd, Bath; ‘S 123’, Howard →Wall Ltd; ‘S 125’, A. →Wells & Co.; ‘S 135’, →Air Ducts Ltd; ‘S 136’, the →Aircraft & General Engineering Co.; ‘S 144’, H. →Atkin; ‘S 156’, J. →Boss & Co.; ‘S 159’, →Bratt Colbran Ltd; ‘S 171’, →Cogswell & Harrison; ‘S 173’, the →Cooden Engineering Co.; ‘S 202’, Stephen →Grant & Lang Ltd; ‘S 223’, →E.S.S. (Signs) Ltd; ‘S 254’, the →Portadyne Radio Co.; ‘S 292’, →Waygood Otis Ltd; ‘S 304’, F. →Liebtruth & Co.; ‘S 309’, →Shannon Ltd; ‘S 311’, the →Art Metal Construction Co. Ltd; ‘S 355’, →Sharpe & Wright; ‘S 365’, →Unity Heating Ltd; and ‘S 388’, James →Purdey & Sons.
- S *and two arrowheads*. A sale mark used on surplus or obsolete British military equipment.
- S *encircled, often in outline black-letter form*. Associated with the products of the →Sterling Engineering Co. Ltd of Dagenham, England.
- S *encircled*. Found on miniature revolvers made in the U.S.A. by R.F. Sedgley, Inc., in 1910B38.
- S *squared, often in a box border*. Found on No. 4 →Lee-Enfield rifles made in the former Stevens Arms Company (by then ‘Stevens Savage’) factory in Chicopee Falls, Massachusetts, U.S.A.
- S *within a lozenge, generally taking a squared italic form*. Associated with firearms, airguns and gas-powered guns made in the U.S.A. by Sheridan Products, Inc.

- SA** or **S.A.** usually within a square or oval border. Found on a variety of military stores: *Suomen armija*, 'Finnish army', used as a property mark. See also 'Sk. Y'
- SA** *superimposition-type monogram, sometimes encircled, with neither letter prominent.* On →Smith & Wesson-type swinging-cylinder revolvers made in Eibar, Spain, by →Suinaga y Aramperri.
- SA** or **S.A.** These marks will be found on U.S. military stores—including many .45 M1911A1 →Government Model pistols—refurbished by the National Armory, →Springfield, Massachusetts.
- SAA:** see 'Single Action Army Revolver'.
- SAB:** see 'Società Armi Bresciane SRL'. The designation is also applied specifically to the SAB G90 Super Auto pistol, a modified form of the Czech CZ 75 chambering 9mm Parabellum or 9×21 IMI ammunition. Most guns are intended for Practical Pistol competitions and have adjustable sights.
- Sabatti** *Fabbrica Italiana Armi Sabatti SpA ('FIAS');* Gardone Val Trompia, Brescia, Italy. FIAS has made 'Carabina →Rover' sporting rifles on the basis of a modified →Mausier action. Shotguns and combination guns have also been offered.
- Sabatti & Tanfoglio;** Gardone Val Trompia, Brescia, Italy. In addition to rifles and shotguns, this gunmaking business has offered 6.35mm calibre automatic pistols under the brand name →Sata.
- Sabot** F. Sabot; 67 rue César Betholon, Saint Étienne, France. Listed in 1951 as a gun barrel maker.
- Sabot** J. Sabot; 14 rue des Francs Maçons, Saint Étienne, France. Listed in 1951 as a gunmaker.
- SACM:** see 'Société Alsacienne de Constructions Mécaniques'.
- Saco Systems, Inc.** Saco, Maine, U.S.A. The failure of the heavy-barrel →Garand derivations, the M15 and M14A2, was counterbalanced by the standardisation of the M60 light machine gun in 1956. This had a gas system originating in the →Lewis Gun, by way of Ruger's T10 and T23, and a belt feed mechanism provided by the MG.42/T24.
- ¶ Service showed that the M60 had severe faults of its own, including a bipod fitted onto the barrel rather than the gas tube and a poor zeroing. The M60E1 made some of the obvious changes, by replacing the bipod on the gas tube and moving the carrying handle, but the guns are still regarded as inferior to the MAG and the Russian PK.
- ¶ Recently, Saco has produced a much lightened gun with a fore pistol grip in an attempt to improve the M60 in a light support role. The M60C is a stripped down M60 with an electric trigger and a hydraulic charger, widely used as a fixed gun on helicopters, while the spade gripped M60D is widely used on pintle mounts in helicopter or gunship doorways.
- Sadler** Arthur Sadler & Goold; Birmingham, Warwickshire, England. This patent agency was a partnership of Arthur Sadler and Lewis William Goold, with chambers at 44 Waterloo Street. It acted for John William →Fearn and Douglas Vaughan →Johnstone. See British Patents 229,851 and 231,270 of 1924.
- Saez** Cosmé Garcia Saez of Madrid patented a rifle in the mid 1860s (U.S. no. 45,801

of 3rd January 1865), an ineffectual breech-loader tested extensively by the Spanish army, converted from 1859 pattern short rifles (*Carabina de Cazadores M. 1857-59*). The most distinctive feature was the disc-like breech block, which rotated inside a two-piece housing. Pressing a latch to the right released the clamp, allowing a small button projecting from the top of the breech housing to retract the disc until the chamber-mouth was exposed.

Safari Made by Société Anonyme Continentale pour la Fabrication des Armes à Feu →Lebeau Courally only in .470 Nitro Express, this Big Game rifle has double back action side locks, double triggers, and a specially strengthened frame. High relief matted ground Renaissance tracery is cut into the action, barrels, rib and pistol grip cap, with finely detailed trophy heads in panels. An Express-type sight lies on the quarter rib.

Safari This brand name was given to a British →Mauser type sporting rifle introduced c. 1965 by →Parker Hale Ltd on the basis of a →Santa Barbara action. Several versions have been made including a box magazine type (1000C). Chamberings ranged from .243 Winchester to .30-06. An improved 'Model 1100' appeared in 1968, with a safety catch on the right side of the receiver and the bolt handle swept downward.

Safari A series of →Mauser pattern sporting rifles made in the U.S.A. by →Rahn Gun Works, with the choice of an elephant, a rhinoceros or a Cape Buffalo head on the magazine floor plate. Chamberings ranged from .308 Norma Magnum to 9.3×64.

Safari or '*BDL Safari*'. A 'big-game' version of the →Remington M700 bolt-action rifle, introduced in 1962. Guns of this type have been offered in chamberings ranging from 8mm Remington Magnum to .458 Winchester Magnum; they have heavy barrels and stocks reinforced with two recoil bolts. Most guns made since 1981 have straight comb butts instead of the earlier →Monte Carlo type. A variant with a synthetic →Kevlar stock ('M700 Safari KS') was introduced in 1989.

Safari or '*Safari Grade*'. A term applied by the →Browning Arms Company to the plainest of the three grades of Mauser action sporting rifles made in the U.S.A. See also →Medallion and →Olympian grades.

Safari Grade A bolt-action rifle announced by the →Dakota Arms Company in 1989. Built on a modified →Mauser /Winchester Model 70 action, chambered for cartridges ranging from .300 Winchester Magnum to .458 Winchester Magnum, it had a gloss-finish walnut stock. However, the original Monte Carlo comb was replaced by a straight version within a year of introduction.

Safari Magnum This was a version of the →Parker Hale →Safari rifle, made only in .375 H&H Magnum with an additional recoil bolt through the stock beneath the chamber.

Safari Mark I Otherwise known as the 'Model 86/70 Safari Mk 1', this was a lever action →Daisy BB gun, derived from the No. 102 →Cub, with a concealed lever in the wrist and pistol grip. It was introduced in 1970.

Safety A brand name associated with Anciens Établissements →Pieper of Herstal,

near Liège. It is usually found on a shotgun introduced c. 1909.

Safety Automatic A brand name associated with a revolver made in the U.S.A. by Iver Johnson's Arms & Cycle Works from 1892 onward. It was replaced by the 'Automatic Safety' or 'Hammer-the-Hammer' design (q.v.), though the differences were minimal.

Safety Hammer This mark will be found on revolvers made in the U.S.A. by →Harrington & Richardson of Worcester, Massachusetts, with a spurless 'no snag' hammer. It was applied specifically to the →American and →Young America patterns, but see also →Police Bicycle Model and →Police Premier.

Safety Hammerless Developed largely through the efforts of Joseph H. →Wesson, these revolvers had their hammers within the frames, a spring loaded safety plate in the back strap, and an inertia firing pin. The first .38 calibre guns were made in 1886. About 260,000 had been made (in five versions) when the last batches were shipped in 1940, but it is unlikely that much production had been done since 1920. Also known as the 'New Departure' or 'Lemon Squeezer', the .32 Safety Hammerless was introduced in 1888. By the time the last guns were sold in 1937, 243,000 had been made in the three major subvarieties.

Safety Hammerless Model This was a concealed hammer version of the Iver →Johnson .32 or .38 →Safety Model revolver, dating from 1894.

Safety Model Subsequently known as the 'Safety Hammer Model'. Introduced c. 1893, this double action .32 or .38 revolver was the first of the Iver →Johnson products to embody what (after 1904) became known as the →Hammer the Hammer system.

Safety Police Made in Norwich, Connecticut, U.S.A., by the →Hopkins & Allen Arms Co. (in c. 1907–14), these revolver were chambered for .22, .32 and .38 rim-and-centrefire ammunition. They were based on the →Automatic Model, but introduced the →Triple Action Safety Lock patented in 1906 by John →Murphy.

Safford P.T. Safford—sometimes listed as 'R.T. Safford' or identified individually (the marks can be difficult to read)—working on behalf of the U.S. government, inspected firearms and equipment marked 'PTS'; the items date from the Civil War and the early 1870s. See also "U.S. arms inspectors' marks".

SAFN: see 'FN-Saive rifle'.

Saft Max Saft; Zella Mehlis in Thüringen, Germany. Listed in 1930–9 as a master gunsmith.

Sage George W. Sage; Plymouth, Michigan, U.S.A. The designer of the →Improved Challenger BB gun for the →Markham Air Rifle Company. See U.S. Patent 477,385 of 21st June 1892, sought in 1891.

Sage Thomas C. Sage; Middletown, Connecticut. The marks of this cartridge-maker, founded in 1862 and subsequently known as the 'Sage Ammunition Works', will often be found on rimfire ammunition dating from the American Civil War. They include 'TCS' and 'SAW'.

SAGEM: see 'Société d'Applications Générales, Électriques et Mécaniques'.

Saginaw Steering Gear A Division of →General Motors, maker of M1 Carbines, machine-guns and components during the Second World War. See also

- 'Winchester'.
- SAI** *superimposition-type monogram without dominant letters*. Correctly read as 'SIA' (q.v.); used by →Security Industries of America, Inc.
- Saiga**: See 'Sayga'.
- Saint Aubyn** Gaston de Saint Aubyn. Listed as a member of the London gun trade in 1894, this gunsmith—or more probably gunmakers' agent—could be found at 7 St Martin's Lane, EC.
- Saint Chamond**; Compagnie des Forges et Acieries de la Marine; Saint Chamond, France. See →Daudetau.
- Saint-Étienne**, or "Manufacture d'Armes de Saint-Étienne" ('MAS'). One of the principal French government arsenals, founded in 1669, this made arms and equipment ranging from the machine-gun described below to 11mm →Chassepot, 11mm →Gras, 8mm →Lebel, 8mm →Berthier and 7.5mm MAS rifles. Among the handguns made in Saint-Étienne have been Mle. 1874, Mle 1874 and Mle 1892 revolvers; a series of experimental blowback pistols made in the period between the wars (the 7.65mm MAS 1925 M No. 1 and 1932 A No. 4, for example); and the Modèle 1935S service pistol of 1940, based on the SACM-Petter Mle 35. A few MAC-50 pistols were assembled in the factory in 1963. Among the semi-automatic rifles have been the 7.5mm MAS 49, 7.62mm MAS 62 and the 5.56mm →FAMAS. See also 'Châtellerault', 'Tulle'.
- Saint-Étienne machine-gun** Introduced to the French army as the 'Mle. 1907', this was an improved form of the French →Puteaux design, with a reversed action. Though issued in substantial quantities, it was not entirely successful.
- St. George's** Usually accompanied by 'W', 'G' and a knight-and-dragon mark, this slogan identifies the guns made prior to the First World War by W. →Grah of Liège.
- St Louis Arms Company** A brand name found on shotguns handled by the H. & D. →Folsom Arms Co., possibly imported from Europe. Some guns have been reported bearing Belgian proof marks.
- Saint Nicholas gun** See 'Fusil Saint-Nicolas'.
- Saive** Dieudonné J. Saive (1888–1970). Designer of the →Fabrique Nationale →FAL rifles.
- Sakaba**: see 'SKB Firearms Company'.
- Sako** The Civil Guard of newly-independent Finland created its first workshop in 1919, in the old Bastmann brewery in Helsinki, to repair and refurbish ex-Russian smallarms. The name *Suojeluskuntain Ase- ja Konepaja Osakeyhtio* (SAKO), 'arms and engineering workshop of the civil guard', was adopted when a move to Riihimäki occurred in December 1927. However, the date of foundation was accepted as 1st April 1921. The facilities in Helsinki and later Riihimäki initially made m/24, m/28 and m/28-30 →Mosin-Nagant rifles for the Protective Corps (*Suojeluskuntain Ylieskunen*, 'Sk.Y.') until a Sako-developed m/39 rifle was adopted for universal service. About 71,000 m/39 rifles had been made when the Continuation War between Finland and the U.S.S.R ended in 1944. Sako was bizarrely sold to the Finnish Red Cross, and the military arms-

making facilities were speedily demolished.

¶ Sako engineer Niilo Talvenheimo began developing the L42 sporting rifle when the Winter War with the U.S.S.R ended in 1941, but the sale of Sako brought work to an end. However, the success of the improved post-war L46 sporter—particularly in the U.S.A.—subsequently allowed the firearms business to be rebuilt. The perfected bolt-action rifles, customarily credited to Eino Mäkinen, have been made on three much-modified actions: the short Vixen (L461, introduced in 1961), medium Forester (L579, 1959, reintroduced in 1962) and long Finnbear (L61, 1961). There are two variants of the L461, a solid-floor single-shot pattern and a magazine-feed type; there are also two L579 actions, the ‘Super Match’ version being pierced only by the ejection port; and the L61 has been made in right- and left-hand versions. Chamberings have ranged from .17 Remington to 6mm PPC (L461), from .22–250 to .308 Winchester (L579), and from .25–06 Remington to .375 H&H Magnum (L61).

¶ The names applied to the rifles have usually reflected their design instead of the difference in action lengths. The Carbine, Deluxe, Hunter, Super Deluxe and Target variants have been offered in all three guises: L461, L579 and L61. The ‘Handy’ (L579, L61) is a short rifle with a half-length fore-end; the ‘Laminated’ variant (L461, L579, L61) has a multi-layer warp-resistant stock; the ‘Super Match’ (L579) is a sophisticated target rifle; the ‘Varmint’ rifle (L461) is essentially a Hunter with a heavy barrel. The ‘Fiberclass’ is an L61 action in a charcoal-grey synthetic stock, and the ‘Handy Fiber’ is a similar gun with a short barrel and a half-length stock. The ‘Safari’ (L61 only) is a big-game rifle with a straight-comb butt, transverse recoil bolts through the stock, and an →Express-type back sight.

¶ The L61 replaced the high-power Sako rifles that had been made in 1950–61 on the basis of refurbished 1898-type →Mauser or new FN-Mauser actions chambered for the .270 Winchester or .30–06 cartridges, and had →Monte Carlo pattern half stocks. A Magnum version accepted .300 or .375 H&H Magnum ammunition.

¶ Sako actions have been supplied to gunmaking business such as the Browning Arms Company, Colt’s Patent Fire Arms Mfg Co., Harrington & Richardson and others. Consequently, Sako-type guns may be listed under a variety of distributors’ names. The latest designs include the .22 rimfire Finnfire series (1994), based on a bolt with a 50-degree throw, and the TRG sporting-rifle series (1995) with a three-lug 60-degree bolt. The TRG is made in sport and magnum forms, in chamberings from .243 Winchester to .30–06, and also as the TRG-21 (7.62×51) or TRG-41 (.338 Lapua Magnum) sniper rifles.

¶ The M72 and M78 Finnsout series of .22 rimfire rifles (1973–84), which included ‘HB’, ‘Magnum’, ‘Hornet’ and ‘Biathlon’ variants, replaced guns built on the P46 and P54 actions. A solitary lever-action rifle design, the VL-63 Finnwolf, was made in small numbers in .243 Winchester and .308 Winchester options from c. 1964 until replaced by the VL-73 (1973–5), with its magazine flush with the stock.

¶ Sako made a few →Kalashnikov-type m/60 (1960–1) and m/62 (1963–6) assault rifles for the Finnish army, but the →Valmet variant was preferred. Sako then made parts for Valmet, until the two businesses became ‘Sako-Valmet Oy’ on 1st January 1987. Work on assault rifles finally ceased in 1997, and it is assumed that the Finns will now simply buy-in weapons when necessary.

¶ Sako has also made target pistols. The ‘22/32’ (1971–80) and the ‘Triace’ (1982–7) were distinguished by the ease with which they could be altered to chamber .22 Short rimfire, .22 Long Rifle rimfire or .32 S&W wadcutter rimfire ammunition. Conversion simply entailed changing the receiver/breech-block unit and the magazine.

¶ Comparatively little has been written about Sako, the best source of information being the company’s commemorative booklet, *Sako 1921–1971*, which is written in Finnish with an English summary. A few details will also be gleaned from John Walter, ‘David and Goliath: Sako and the Winter War’ in *Shooter’s Bible* no. 74, 1983; John Walter, *Rifles of the World* (Krause Publications, third edition, 2006) contains a concise-but-useful listing of individual rifle models.

Salamon, 21 chemins des Acacias, Saint Étienne, France. Listed in 1951 as a gunmaker.

Salter & Varge Ltd supplied →Winchester rifles and shotguns to the British authorities, 1941B2.

Salvator-Dormus This was early Austro-Hungarian pistol, designed in 1892 by Archduke →Karl Salvator and Georg, Ritter von Dormus. A blowback chambering a special 8mm cartridge, it had a cocking lever beneath the barrel and an exposed hammer; the magazine, containing within the butt, accepted a five-round clip that fell out of the gun after the last round had been chambered. A few prototype Salvator-Dormus pistols were made c. 1894–5, perhaps by Škoda, but found no lasting success.

Salvaje A 6.35mm Browning type automatic made in Spain by →Ojanguren y Vidosa of Eibar; seven rounds, hammer fired.

Salaberrin Santiago Salaberrin; Eibar, Guipuzcoa, Spain. The →Etna, →Protector and →Tisan pistols are usually attributed to this gunmaking business, though the ‘Protector’ is also sometimes identified as a product of →Echave y Arzimendi.

Salaverria Iraola Salaverria y Compañía; Eibar, Guipuzcoa, Spain. Maker of the →Destructor pistol.

Salza: Domenico Salza, Italy. See ‘Garand’.

Salle system Incorporated in a few Belgian-made shotguns, this relied on a dropping-block mechanism (undoubtedly inspired by the →Martini) which was actuated by a spur-like cocking lever protruding from the top of the action body. Pressing the spur forward dropped the blocks and often also ejected spent cases; pulling it backward raised the block and cocked the strikers.

Saloon Gun, alternatively known in English as a ‘Parlour Gun’, or as *Zimmerstutzen* in German, this was invariably a low-power firearm chambered for →Flobert or primer-propelled ammunition. Quiet and surprisingly accurate, cartridges

of this type were ideally suited to ultra-short range target shooting and were extremely popular in Europe prior to the First World War. Lack of power enabled the guns to be built simply, often with breech-blocks locked by nothing other than the fall of the hammer, but manufacturing quality could be surprisingly good. See also 'Gallery Gun'.

Samozhenkov. The designer of the original 7.2kg tripod mount for the Soviet →Kalashnikov PKS machine-gun. It was replaced in 1969 by the lightweight →Stepanov pattern.

San Cristobal arms factory, Dominican Republic. Created with Italian and Hungarian assistance, this gunmaking plant made the distinctive .30 M1 'Cristobal Carbine' and 7.62×51 Model 62 assault rifles in small numbers. Its current status is uncertain.

Sanders A. Sanders; Maidstone, Kent. A gunmaker, successor to John →Swinfen, whose marks have been found on sporting guns and pin-, rim- and centrefire ammunition sold in the period prior to the First World War. Among the shotgun cartridges were 'The →Allington', 'The →Invicta', 'The →Long Tom' and 'The →Medway'.

Sanders Small Arms Ltd; London? Makers of auto loading shotguns in accordance with patents granted to →Chevallier & Sanders. One gun—'Coronation Model No. 1'—was made for exhibition at the Coronation of King George VI in 1937, but the Second World War put an end to development. An 'SSA' monogram trademark was used.

Sanderson. F.W. Sanderson, a government arms inspector working from the American Civil War on into the early 1880s, accepted gun-stocks and other military stores marked 'FWS'. See also "U.S. arms inspectors' marks".

Sandringham ['The...']. A mark applied by →Gallyon & Sons to shotgun cartridges.

Sanner: 'Ch. Sanner'. See 'Charles →Marion'.

Santa Barbara, "Empresa Nacional de Industrias Militares 'Santa Barbara' SA"; La Coruña, Spain. The state-owned small arms factory makes a variety of firearms, including the →CETME series and other militarily-oriented products. It also makes the Santa Barbara →Mauser actions, with a radial safety on the receiver behind the bolt handle. These have been supplied to →Fajen, →Golden State, →Parker Hale and many other gunmaking businesses.

Santa Fé Arms Company; Pasadena, California, U.S.A. Importer in the mid 1960s of 1903-type →Springfield receivers made in Japan. These investment castings lacked charger guides and did not offer the durability of the machined-steel originals.

Santos Casimir Santos; Eibar, Guipuzcoa, Spain. This gunmaking business was responsible for the pocket pistols bearing the brand names →El Cid and →Venedor.

Santos Modesto Santos; Eibar, Guipuzcoa, Spain. The compact automatic pistols made under the names →Action and 'MS' have been identified with this manufacturer. By way of 'Les Ouvriers Reunis', Santos made →Ruby-pattern semi-automatic pistols for the French army during the First World War.

- Sanvinet**; 31 rue César Bertholon, Saint Étienne, France. Listed in 1951 as a gunmaker.
- SAR, S.A.R.** A designation has been applied to a short-barelled, but otherwise standard Israeli →Galil automatic rifle. It represents 'Short Automatic Rifle'.
- SAR** Found on a few 5.6mm-calibre Japanese break barrel spring-air rifles, the manufacturers of which remain untraced. The mark may simply have been a misreading of →SKB.
- Sarda et Gonon** or 'Sarda Gonon'; Saint Étienne, France. Listed in 1933 as a gunmaker.
- Sarson & Roberts**; New York City. Gunmakers operating in 1861–3.
- Sata**. A compact 6.35mm automatic pistol was made by →Sabatti & Tanfoglio.
- Saturn**. Associated with →Mausser type sporting rifles sold by Albrecht →Kind c. 1959–68. It was identical with the →Merkur, but usually had a single trigger.
- Sauer** Hans Sauer. Co-owner of J.P. Sauer & Sohn (q.v.), prior to 1945, and probably also the recipient (of 'Nürnberg, Germany') of British Patent 17,150/14 of 1914 to protect 'safety projectiles': rubber balls with a wooden insert to retain the flights.
- Sauer** J.P. Sauer & Sohn; Suhl, Thüringen. Claiming origins in 1751, Sauer & Sohn were amongst the first gunmakers to favour the →Mausser action, making sporting rifles from c. 1901 until the beginning of the First World War. The rifles often had slim fore ends held to the barrel by a transverse key, horn trigger guards, and 'flats' in the woodwork beneath the receiver. The *Deutsches Reichs Adressbuch* for 1900 lists the proprietor as Franz Sauer, but he had been joined by 1914 by his sons Hans & Rolf. Hans and Rolf Sauer were still running the company in 1939. In addition to the Suhl factory, a smithy (*Schmeidewerk*) was to be found in nearby Steinsfeld, and an office was being maintained in Meiningen in 1941. Trading ceased at the end of the Second World War, but a new business of the same name began trading in 1948 in Eckenförde/Holstein.
- Sauer** J.P. Sauer & Son GmbH & Companie, founded in 1948 in Eckenförde/Holstein, Germany, is a post war successor to J.P. →Sauer & Sohn of Suhl. Now a division of SIG, it is best-known for the →SIG-Sauer pistols but also once made revolvers. Dating from the 1970s, these included SR3 target, TR6 personal-defence and VR4 sporting patterns, all with Smith & Wesson-style swing-out cylinders, and a sturdy Peacemaker-style gun known as the 'Western Six Shooter'.
- Sauer** Rolf Sauer; co-owner of J.P. Sauer & Sohn (q.v.), prior to 1945.
- Sauer pistols** included the →Bär and the →Roth-Sauer, but, by 1910, Sauer had decided to make guns of its own. Inspired by the →Roth-Sauer pistol, the 'Old' or 1913-pattern Sauer was designed by Heinz →Zehner and patented in 1912. Chambered for the 6.35mm or 7.65mm Browning cartridges, it had a distinctive tubular-top frame and a separate reciprocating breech-block. The return spring was concentric with the barrel, and a striker-type firing mechanism was used. Minor variants differed in safety arrangements and dismantling systems: the first guns, for example, had a separate magazine safety system.

¶ At least 85,000 Sauer pistols had been made by 1918, and production of 1913-pattern pistols continued until the 7.65mm →Behörden-Modell appeared in 1930. Unfortunately for Sauer, the improvements were not enough to allow the archaic-looking Behörden-Modell to compete with the Walther Polizei-Pistole; in 1939, therefore, a new enclosed-hammer design appeared.

¶ Chambered for the 7.65mm Browning or 9mm Short cartridges, the Modell 38-H ('H', *Hahn*, 'hammer') offered a sophisticated double-action trigger and a de-cocking system. It was made in large numbers during the Second World War, proving popular with military and paramilitary authorities alike. Sauer also made compact 6.35mm vest-pocket pistols, Westentaschenpistols, in the 1920s. The Model 1925 and Model 1928 were essentially similar, though the slide of the earlier gun was less streamlined and had additional three-quarter depth retraction grooves at the muzzle.

Sauerbrey Aug. Sauerbrey of Suhl in Thüringen, Germany, was listed in the *Deutsches Reichs Adressbuch* as a gunsmith, 1930–9.

Sauerbrey Erich Sauerbrey; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a gun stock maker.

Sauerbrey Valentin Sauerbrey; Switzerland. See 'Vetterli'.

Saunders George E. Saunders. This Federal government arms inspector, working in the early 1860s during the Civil War, accepted cap-lock revolvers marked 'GES'.

Saunders G.G. Saunders, operating in the period immediately before the Civil War, this government arms inspector accepted →Colt Dragoon revolvers marked 'GGS'.

Saunders H. Saunders, a U.S. government arms inspector operating in the mid 1870s, accepted guns and equipment marked 'HS'. Care is necessary to distinguish his work from that of Horace →Scott, Harrison →Shaler, Harris →Smith, Howard →Stockton and H. →Syrett; though the periods differ, overlaps are to be expected. See also "U.S. arms inspectors' marks" for all three entries.

Saunier; 3 rue Jules Vallès, Saint Étienne, France. Listed in 1951 as a gunmaker.

Sauvageon; rue de Lyon 47, Saint Étienne, France. Listed in 1892 as a gunmaker.

Savage The A.J. Savage Munitions Company of San Diego, California, contracted to make 100,000 .45 M1911 →Colt-Browning pistols for the U.S. government during the First World War. No complete guns are known to have been made, though slides were made in some numbers; these bore a large 'S' within a 'flaming bomb' centrally on the left side directly behind the patent acknowledgements. The remainder of the contract was cancelled immediately after the Armistice of November 1918.

Savage Arthur William Savage. The first patent obtained by this gun designer was granted in July 1887 to protect a tube-magazine variant of the →Peabody Martini, but hinged block actions were unsuited to magazine feed. By 1889, however, Savage had developed an improved lever action mechanism and, in February 1893, received a patent protecting a magazine with each cartridge in

a separate cradle.

Savage Edward N. Savage. Co patentee with Henry →North of a 'revolving firearm' protected by U.S. Patents 22,566 of 18th January 1859 and 28,331 of 15th May 1860. Both were assigned to the →Savage Revolving Fire Arms Company. Savage also patented a shoulder stock for the revolver, protected by U.S. Patent 32,003 of April 1861.

Savage Arms Company; Utica, New York State, U.S.A. The Savage Repeating Arms Company was organised in Utica in 1893 to exploit the ideas of Arthur W. →Savage. The Savage Arms Company followed in 1899, and incorporation (forming the Savage Arms Corporation) occurred in 1917. The company is best known for its automatic pistols and the thousands of Lewis machine guns made during the First World War, but was also given an order for 300,000 .45 M1911 →Colt-Browning pistols in 1917. No guns are known to have been made, as the contract was cancelled immediately after the 1918 Armistice. Savage made Lee Enfield (q.v.) No. 4 Mk I* rifles during the Second World War, the first being test fired in July 1941. By 22nd June 1944, when work ceased, at least one million guns had been assembled in the former →Stevens Arms & Tool factory. Alternative quantities as high as 1.24 million have been made, the discrepancies apparently arising from the inclusion of many thousand guns supplied to China under Lend Lease arrangements. By then trading from Westfield in Massachusetts, the company was distributing the products of J.G. →Anschütz in the U.S.A. in the 1970s.

Savage rifle, bolt-action. Renowned for the Model 99 lever-action rifle, the Savage Arms Company—in a variety of guises!—has also made large numbers of bolt-action rifles, including 1,236,000 No. 4 Mk I and I* (Lee-Enfield, q.v.) rifles for the British and Canadian governments during the Second World War.

Though a selection of .22 rimfire patterns had been made prior to the First World War, Savage, like Remington, began work on centrefire bolt-action rifles only after hostilities has ceased. The Model 40 (1928–40) hard on the heels of an unsuccessful adaptation of a classic 1898-type Mauser action. The M40 relied on two lugs on a sleeve around the bolt to lock the breech, but was strong enough to chamber cartridges ranging from .250 Savage to .30–06. The Model 45 was a deluxe version, but the Savages were unable to compete with the Winchester M54 and M70.

¶ The Model 340 (1957–85) originated in 1947 as the ultra-plain Stevens 320 series, Savage having purchased the J. →Stevens Arms Company in 1920. The Savage-brand guns, chambered for cartridges ranging from .22 Hornet to .30–30 Winchester, were locked by a single lug on the bolt head and another on the back of the bolt body.

¶ The most interesting of the post-war designs is undoubtedly the Model 110, made in accordance with patents granted in the 1950s to Nicholas Brewer. This gun has never been regarded in the same way as the legendary U.S. designs, the →Remington Model 700 and the →Winchester Model 70; however, as these are both essentially slightly modified Mausers, the Savage is much more

interesting mechanically than either. The barrel is retained by a collar, the tip of the sear/bolt-stop doubles as an indicator, protruding from the right side of the stock alongside the receiver bridge when the trigger is cocked, and a sliding safety lies on the tang behind the bolt. The most obvious feature, however, is the unusually short cocking-piece shroud.

¶ Introduced commercially in 1958, the M110 has been made in a stupefying variety, partly due to the changing fortunes of its manufacturer. The initial chamberings were .243, .270 and .308 Winchester, plus .30–06. Medium and long actions were made in right- and left-hand versions, at a time when left-handers were often ignored; a 'Magnum' action appeared c. 1963; and detachable box magazines were offered for the first time in 1966.

¶ A renaissance has led to the Model 111 Classic Hunter (introduced in 1994), the Model 112 (1994), the Model 114 (1996, though retrospectively applied to an existing 'Classic Ultra' pattern), the Model 116 (1992) and the Model 118 (1999), though all of these embody the same action. Though guns are often sold under names such as 'Weather Warrior', Savage habitually designates them alphanumerically, ranging, in the case of the basic rifle, from the Model 100B—originally with a select →Monte Carlo stock—to the 110XP3 shooting-outfit guns (introduced in 1991) with 3–9× optical sights and Kwik Site mounts.

¶ Savage rifles were made in Chicopee Falls, Massachusetts, until a move to Westfield occurred in 1959. The original Savage Arms Company was superseded by Savage Arms, Inc., and continues to trade under this particular name. A list of pre-1998 variants will be found in John Walter, *Rifles of the World* (Krause Publications, third edition, 2006); surprisingly, there is as yet no authoritative history of Savage.

Savage rifle, lever-action. Made by →Marlin, the original 1895-pattern military musket chambered .30–40 Krag cartridges and had an eight round magazine; the carbine was similar, excepting for its short barrel and half stock. These guns were also made in sporting guise.

¶ The perfected 1899-pattern rifle, made until 1908 in Utica by the Savage Arms Company, was offered in .303 Savage and .30B30 Winchester. There was also a half-stocked carbine and a sporting rifle, made until 1917, which could be chambered for cartridges ranging from .22 High Velocity to .38–55 Winchester. Magazine capacity was reduced to five rounds (a sixth round could be carried in the breech if required), and changes were made in the action. a cocking indicator was set into the top surface of the bolt, and a firing pin retractor.

¶ Barrels were round, half octagon or fully octagonal. Simple and sturdy, the basic Savage action could handle most of the cartridges available prior to 1917, though, as the Savage breech block compressed fractionally on firing, ultra-high power rounds were unsuitable. The standard chambering was .303 Savage, always been known in Britain and the British Empire as '.301 Savage' to avoid confusion with the standard service cartridge.

¶ The 1899-pattern rifle laid the basis for the sporting guns that lasted until the 1980s. These included the Model 99A (1920–42), with a straight-wrist butt

and a schnabel tip fore end; the 'take-down' Model 99B (1920–36); the carbine-length Model 99E (1920–36); the 'featherweight' Model 99F (1920–42); the Model 99G (1920–42), with chequered woodwork; the Model 99H (1931–42), a military-style solid-frame carbine with a straight-wrist butt; and the Model 99K (1931–42), a deluxe variant with an engraved receiver.

¶ The Model 99EG of 1936 was an improved solid-frame gun designed to replace all its predecessors. Other guns in this group included the Model 99R, with chequering on the pistol grip butt and round tip fore end; the Model 99RS, identical to the 99R excepting for an additional Lyman peep sight on the upper tang; and the Model 99T, a lightweight solid-frame gun. Work on all three ceased in 1942 to allow Savage to concentrate on war-work.

¶ Production of the Models 99EG (1946–60), 99R (1946–60) and 99RS (with a Redfield tang sight, 1946–57) began again after the Second World War, after a few minor changes had been made. Work moved from Chicopee Falls to Westfield, Massachusetts, in 1959, and the millionth Model 99 was presented to the National Rifle Association in March 1960. Post-war patterns include the Model 99F ('Featherweight', 1955–73), with a solid frame; the 99DL (1960–73), basically an 'F' with a →Monte Carlo butt; the short-barrelled carbine-style Model 99E (1960–85) with skip-line chequering on the woodwork; the Model 99C (1965 to date), with a detachable box magazine holding three .284 Winchester or four .243 and .308 Winchester rounds.

¶ The Model 99CD (1965–81) was a deluxe form of the 99C, but the high-quality Models 99DE 'Citation Grade' and 99PE 'Presentation Grade', introduced in 1968, sold so badly that they had been abandoned within two years. A special 'Model 1895 commemorative' was made in 1970 to mark the rifle's 75th anniversary, but was little more than a perfected Model 99.

¶ The modernised Model 99A of 1971, abandoned in 1982, had a sliding safety catch on the tang and could be obtained in chamberings ranging from .243 Winchester, to .300 Savage. The short-lived Model 99–358 (1977–81), with a straight-comb butt and a ventilated recoil pad, was made only for the .358 Winchester round. This left only the Model 99C to celebrate the design's centenary.

Savage rifle, slide-action. The centrefire 1903-pattern rifle lasted until 1921. It was a 'take-down' design with a round-back receiver, a pistol-grip butt and a ribbed slide handle. Barrels could measure as much as 30in, and a decorative 'Gold Medal Model' could be obtained. The 1909-pattern rifle, made until 1915, had an angular receiver and a plain cylindrical slide handle lacked decoration. The 1914 pattern, a 'take down' design, was a rimfire derivative of the basic action designed to chamber Short, Long and Long Rifle .22 rimfire round interchangeably, but was made only in comparatively small numbers until 1924. It had a tube magazine beneath the barrel, a round-backed receiver, a ribbed slide handle, and an octagonal barrel. The Model 25 of 1925–9 and the Model 29 (1929–57 with a gap for the war years) were similar, but had minor changes in the action. Pre-war guns had octagonal barrels; post-war examples were

usually round and a safety catch was added in the rear web of the trigger guard. The last slide-action Savage was the Model 170, made in Westfield in 1970–81 in .30–30 Winchester or .35 Remington. Locked by rotating lugs on the bolt into the receiver walls, it had a three-round tube magazine beneath the barrel and a →Monte Carlo butt with an impressed chequer-panel on the pistol grip. The safety catch lay on the upper tang behind the receiver. A short-barrel .30–30 carbine version, with a straight comb butt, appeared in 1974.

Savage-Stevens. Made 1,196,700 →Lee-Enfield .303 No. 4 Mk 1* rifles for the British government during the Second World War, together with about 40,000 supplied to China under Lend-Lease.

Savage Revolving Fire Arms Company; Middletown, Connecticut, U.S.A. The assignee of the 'revolving firearm' patents granted to Henry →Savage and Edward →North in 1859B60, this gunmaking business succeeded →Savage & North in 1861. The trigger guard of the improved .36 calibre 'navy' or 'heart guard' revolver extended back to the base of the butt. The first sales of the new .36 calibre 'navy' gun were made to the Federal government in August 1861, and 11,284 had been acquired by the end of the American Civil War. A few guns were made for shoulder stocks patented by Charles Alsop in May 1860 (US no. 28433) or Edward Savage in April 1861 (no. 32003). Operations ceased in 1867.

Savage & North; Middletown, Connecticut, U.S.A. This business made the distinctive .36 calibre '8 Guard' revolvers patented by Henry →North in June 1856. The U.S. Navy ordered three hundred in July 1858 and the army took five hundred, but neither order was completed until 1860. Total production of all the '8 Guard' Savages scarcely exceeded two thousand when work finished in 1861.

Savin Ivan Vasilyevitch Savin was born in 1892 in Zaytzevo, a village in the →Tula district. His father had worked for many years in the Tula cartridge factory; and so, after completing his elementary schooling, Savin began work as an apprentice in the Tula machine manufactory, moving to Moscow district when he had completed his training. Returning to Tula in 1914, he joined the workforce of the local small-arms factory. Moving back to Moscow in 1932 on the instructions of the People's Commissariat of Military and Naval Affairs, Savin and A.K. →Norov began working on a way of adapting the →ShKAS aircraft gun for synchronisation or wing-mounting in the I-15 and I-16 fighters respectively. Work also began on the high-speed Savin-Norov or 'SN' aircraft gun. This project was moved to the Kovrov machine-gun factory in 1936, where unlimited production was undertaken. Savin returned to Moscow in 1941 to work on large-calibre cannon, retired at the end of the Second World War, and died in 1956.

Savin-Norov, also known as the 'SN', this was an aircraft machine-gun designed by →Savin and →Norov. See preceding entry.

Savoie. P. Savoie; rue d'Annonay 28, Saint Étienne, France. Listed in 1879 as a distributor of and agent for arms and ammunition.

'SAW', 'S.A.W.', 'S... A... W' A series of →headstamps found on rimfire ammunition

- made by the Sage Ammunition Works of Middletown, Connecticut. See 'T.C. →Sage'.
- Sayga** A semi-automatic shotgun, *Samozaryadnyi gladkostvolnyi karabin Sayga*, based on the →Kalashnikov assault rifle, was introduced by →Izhmash A/O in 1994 in .410 and 20-Bore. The Sayga-20 was not particularly successful, and was replaced in 1996 by a more effective 12-Bore 'Sayga-12' variant. The standard guns have conventional wooden butts and fore-ends, though pistol-grips can be fitted instead of the butt when appropriate. The 'K'- and 'S'-suffix versions have assault-rifle type pistol grips and folding butts, and short and long barrels respectively.
- Saxonia** A brand name found on shotgun cartridges made by →Munitionswerke Schönebeck prior to 1914.
- SB, S B, S. & B.** Marks associated with the products of →Sellier & Bellot of Prague, often found on Austro-Hungarian (pre-1918) and Czechoslovakian (post-1918) ammunition.
- S.C.** Found on the barrels of British →Lee Enfield rifles with a 'Small Cone', an abbreviated lead from the chamber to the rifling suited to Mk VII ball ammunition.
- S.C.A.T.S.:** possibly used as a headstamp on shotgun ammunition. See 'Southern Counties Agricultural Trading Society'.
- S.C.C., or S.C.Co.** Marks used in the headstamps of ammunition made by the →Strong Cartridge Co. of New Haven. Dates to resolve.
- S.C.C.** Found in the headstamps of cartridges made by the Standard Cartridge Company of Pasadena, California.
- Schäfer** Th. Schäfer; Erfurt, Regierungstrasse 13, Germany. Listed in 1941 as a retailer of sporting guns and ammunition.
- Schaller** H. Schaller; Suhl in Thüringen, Germany. A gunsmith known to have been trading in 1920.
- Schamal** Franz Schamal; Prague, Bohemia. An air pistol made by this gunsmith was exhibited at the Great Exhibition in London in 1851. Gardner dates his activities as 1847–51, but trading continued into the 1870s possibly under the supervision of a son of the same name.
- Scharf & Son**, St Louis, Missouri, U.S.A. Little is known about this business, which may only have been a retailer of spring air gallery guns. One surviving example is known to have been made in St. Louis by →Basler & Denk.
- Scharfenberg** Heinrich Scharfenberg; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a master gunsmith.
- Schaum** Hans Schaum; Suhl in Thüringen, Germany. See 'Franken & Lünenschloss'.
- Schedetal** Zieh- und Stanzwerk Schedetal AG of Hannover Munden, Germany, was founded in the 1880s and has since made ball-shot and diablo pattern airgun pellets. It was acquired by →Haendler & Natermann in 1927, and finally ceased trading as a separate entity on 12th March 1974. The distinctive 'Z & S' mark has been retained by the present owners for use on export lines.
- Scheintod guns** Among the most popular non lethal 'disabling guns' have been

Scheintod or 'simulated death' patterns, often originating in Germany—Adolf →Niemeyer of Suhl was among the most prominent participants—at the end of the nineteenth century, accompanying the rise of bicycling. Cyclists in urban and rural areas alike soon realised that they needed some protection against dogs and wolves. One result was the small calibre →Puppy and →Velo Dog revolvers, but the use of firearms of this type was increasingly restricted.

¶ Scheintod guns were one of the alternatives, firing blanks, flares, tear gas, pepper or even sand. Calibre was customarily 12mm prior to the First World War, though 10mm versions were also made; post 1918 guns may chamber cartridges as small as 6mm. At their crudest, Scheintod pistols consisted of a barrel which either screwed into the breech face or was attached by a bayonet joint. More sophisticated designs could have sliding barrels locked by radial levers, but almost all had simple single action lockwork and sheath triggers.

¶ Flare pistols marked *Entlarvt* ('flash') are generally comparable. The earliest examples, usually made prior to the First World War, had steel barrels and gutta percha grips; post war guns often had zinc barrels and bakelite grips. Additional details will be found in Lewis Winant, *Firearms Curiosa* (Ray Riling, 1961), and John Walter, *Secret Firearms* (Arms & Armour Press, 1995).

Schemann, U.S.A.: see 'Wirsing & Schemann'.

Schenk C. (or possibly G.) Schenk; Berne, Switzerland. Maker of a crank wound volute spring gallery pistol, probably about 1875B80.

Schenkl John Schenkl of Boston, Massachusetts, patented a needle rifle in June 1857 and offered it commercially prior to the Civil War without success. It had a half-octagon barrel and a case-hardened receiver. The trigger guard could be turned to the right to move the barrel away from the standing breech, tip it forward, and expose the chamber.

Scheufler Bernhard Scheufler; Berlin, Germany. This man was granted a German patent on 10th August 1881, protecting a push in barrel airgun very similar to the contemporary →Quackenbush.

Scheiler Oskar Schieler & Sohn; Suhl in Thüringen, Germany. A gunmaking business trading in the 1920s.

Schiess mit Luft A brand name—'shooting with air'—registered by →Mayer & Grammelspacher of Rastatt/Baden in 1904.

Schilling A. Schilling; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a master gunsmith.

Schilling Bernhard Schilling; Suhl in Thüringen, Hügel 1, in 1940. Listed as a gunmaker (Büchsenmacher) in the Deutsches Reichs-Adressbuch and other German trade directories in 1930B45.

Schilling Charles Schilling; St Louis, Missouri, U.S.A. Son of Frederick →Schilling, working until the late 1870s.

Schilling Ed. Schilling; Suhl in Thüringen. Listed in the 1920 edition of the Deutsches Reichs-Adressbuch as a gunsmith, 1920.

Schilling Ernst Friedr. Schilling, Suhler Waffen- u. Fahrrad-schmiede; Suhl in Thüringen, Schneid 11. Listed in 1914 as a gunmaker, and again in 1939B41 as

- a maker of sporting guns and accessories under the proprietorship of Friedrich Paul Schilling.
- Schilling** F. Schilling; Suhl in Thüringen, Germany. Trading in 1939 as a specialist gun part maker.
- Schilling** Frederick Schilling; St Louis, Missouri, U.S.A. Schilling may originally have come from Lancaster, Pennsylvania, where a gunsmith of the same name was active in the 1850s. He joined →Blickensdorfer in 1865, becoming a partner in the business in 1869. Gallery guns were being made by 1870, but by 1873 Schilling was operating alone. The 1875 city directory lists Charles F. →Schilling at 12 Third Street in St. Louis, and Frederick Schilling apparently in Columbus, Ohio. (NB: Robert E. Gardner, in *Small Arms Makers* confusingly listed the proprietor of Blickensdorfer & Schilling as 'J. Schilling'.)
- Schilling** Friedr. Paul Schilling; Suhl in Thüringen. The owner of 'Ernst Friedr. Schilling' (above) from c. 1930 until the end of the Second World War.
- Schilling** G. Schilling; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a master gunsmith.
- Schilling** Gottlieb Schilling; Suhl in Thüringen, Germany. Listed in 1920B39 as a gunsmith.
- Schilling** H. Schilling; Suhl in Thüringen, Germany. A specialist gun barrel maker trading in Suhl in 1930.
- Schilling** Hugo Schilling; Suhl in Thüringen, Germany. Listed in 1930 and 1939 as a gunsmith.
- Schilling** Paul Schilling; Suhl in Thüringen. Proprietor of Schilling & Kramer (below) prior to 1945.
- Schilling** Rob. L. Schilling; Suhl in Thüringen, Germany. A 'weapons maker' operating in 1939.
- Schilling** Str. Schilling; Suhl in Thüringen, Germany. Listed as a specialist barrel blank maker in the *Deutsches Reichs Adressbuch* for 1939.
- Schilling** Val. Chris. Schilling; Suhl in Thüringen, Germany. Founded in 1816, this business became one of Germany's leading nineteenth century gunmakers. Schilling made revolvers as part of a combine with →Hanel and →Sauer in the late nineteenth century, and may have made airguns for →Bergmann or Eisenwerke Gaggenau. Schilling made semi automatic pistols for Bergmann, until the facilities were allegedly acquired in 1904 by Henrich Krieghoff. However, the *Deutsches Reichs Adressbücher* list the owners in 1900 as Albert & Moritz Schilling, who had been joined by 1914 by Walter Schilling. Fortunes declined considerably in the immediate post 1918 period, and the 1920 directories record the sole proprietor as Ludwig Bornhöft. Schilling completed 1898-pattern →Mauser rifle actions in half stocked sporting guise, offering them in chamberings ranging from 6×58 Förster to 8×75. Most will bear a discreet 'V.C.S.' mark. A trade directory entry dating from the mid 1920s offered 'hunting and practice weapons of all types, optical sights, ammunition, and the ability to 'offer catalogues and handle correspondence in all languages'. *Deutsches Reichs Adressbucher* continued to list Schilling as a 'weapons maker

and sales agency' in 1930 and a 'weapons maker' (Waffenfabrik) in 1939. Premises were occupied in Suhl at 'Strasse de Sturm-Abteilung 10' (1938-41), but the once-renowned business had lost much of its impetus when the Second World War began and had regained very little when work finally ceased in 1945. Trademark: 'VCS' or 'V.C.S.'

Schilling & Kramer; Suhl in Thüringen, Strasse der Sturm-Abteilung 21. A maker of guns and gun-parts listed in the *Deutsches Reichs-Adressbuch* for 1940.

Schimmel Arms Company. This business was formed in 1952 to make the Schimmel gas operated pistol, known as the 'GP 22'. The fixtures were acquired by the →American Weapons Corporation in 1955 and manufacture continued as the →American Luger (later 'Carbo Jet').

Schindler Christian Ludwig Schindler Sohn; Zella St Blasii in Thüringen, Germany. Listed in 1900 as a gunmaker.

Schleenstein Ernst Schleenstein; Suhl in Thüringen, Germany. Listed in 1939 as a gunsmith.

Schlegelmilch Caspar Schlegelmilch; Suhl in Thüringen, Germany. Trading in 1914-20 as a specialist gun barrel maker, under the ownership of Ernst Wilhelm Schlegelmilch.

Schlegelmilch Franz Schlegelmilch; Suhl in Thüringen, Germany. A barrel blank maker listed in the 1939 edition of the *Deutsches Reichs Adressbuch*.

Schlegelmilch H. Schlegelmilch; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a master gunsmith.

Schlegelmilch Hermann Schlegelmilch; Suhl in Thüringen, Germany. Registered as a gun stocker shortly before 1939.

Schlegelmilch Hermann Schlegelmilch; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a gun barrel drawer.

Schlegelmilch H. & K. Schlegelmilch; Suhl in Thüringen, Germany. Listed in 1900 as a gunmaker, 1900.

Schlegelmilch Louis Schlegelmilch. A gunmaker associated with the German →Reichsgewehr, and also with a primitive semi automatic pistol.

Schlegelmilch Reinhard Schlegelmilch; Suhl in Thüringen, Germany. This gun stocker was listed in the 1939 directories, but had ceased operations by 1945.

Schlegelmilch Robert Schlegelmilch; Meiningen an der Ower. Listed in pre-1914 directories as a maker of sporting guns.

Schlesinger Joseph Schlesinger. An English-based gunmaker listed in 1856 at Albion Place, London Wall.

Schlütter Alfred Schlütter; Zella Mehlis in Thüringen. Listed in 1920 as a wholesaler of guns, accessories and ammunition. Listed in the *Deutsches Reichs Adressbuch* for 1930 (as 'Alfred Schlüter') as a retailer of guns and ammunition, but possibly also maintaining repair facilities.

Schlütter Herbert Schlütter; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a gunmaker.

Schlütter Robert Schlütter; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a gun stock maker.

Schmaltzern, New York City. Recorded by Eldon Wolff, in *Air Guns* (1958) as a maker of volute spring →Gallery Guns, operating in the 1870s. The name has occasionally been listed as ‘Schmalzlar’.

Schmalz & Decker; Zella St Blasii in Thüringen, Germany. Listed in 1900 as a gun and weapon maker.

Schmeisser, Schmeißer Hans Schmeisser; Suhl, Thüringen, Germany. The co patentee with his brother Hugo of the pan magazine for the →Haenel air rifle: British Patent 302,279.

Schmeisser, Schmeißer Hugo Schmeisser; Suhl. The son of the gunmaker Louis →Schmeisser, Hugo Schmeisser is best remembered for the sub machine guns and assault rifles designed for C.G. →Haenel, but he also patented the →Sportmodell bolt action airgun. Among the patents granted to Schmeisser were the following, most listing his address at 5 Philosophenweg, Suhl. British Patent 277,265, accepted on 15th September 1927, protected the cocking mechanism of the Haenel Models 26 and 28 pistols. The action resembles the →Improved Britannia rifle. British Patent 302,279 (with Hans Schmeisser) was accepted on 30th January 1930 to protect an automatic pan magazine used on the Haenel IVR and VR rifles. British Patent 391,695 of 4th May 1933 allowed claims for a means of latching cheap children’s type airguns, using a spring steel bar above the receiver. British Patents 422,231 of 1934 (for the detachable box magazine) and 422,638 of 1934 protected the perfected →Sportmodell bolt action. British Patent 472,854, accepted on 1st October 1937, was a combination of the two German patents—21st May 1935 and 8th October 1936—granted for a revised version of the →Sportmodell with a multiple spring assembly to provide greater power. There was also an automatic loading port for diablo pellets. British Patent 499,543 allowed improvements to 472,854. Schmeisser’s name is also mistakenly attached to the German MP. 38 and MP. 40 submachine-guns, and, with little more justification, to the Mkb. 42 (H) that developed into the MP. 43/Stg. 44 series.

Schmeisser, Schmeißer Louis Schmeisser (1848-1917), father of Hugo Schmeisser, worked first for →Bergmann and then with →Rheinische Metallwaren- & Maschinenfabrik. He is remembered as the designer of the →Dreyse pistols and machine-gun.

Schmidl Eduard Schmidl, one of the leading gunmakers established in →Weipert, Bohemia (part of Austria-Hungary prior to 1918), was one of the principal members of a co-operative formed in 1887 to produce components for the straight-pull →Mannlicher service rifle that had been adopted for the Austro-Hungarian army.

Schmidt Franz Schmidt; Zella-Mehlis and Suhl, Thüringen, Germany. Listed in 1930 as a gunmaker; in 1939 as a gunsmith; and in 1941 as a maker of ‘weapons’ (Waffenfabrik).

Schmidt Franz & Herbert Schmidt; Zella-Mehlis in Thüringen. Founded in 1919, this partnership made sporting guns and accessories, often marked ‘FHS’, before moving to Suhl in the 1920s. See also ‘Franz Schmidt’.

- Schmidt** Herbert Schmidt; Ostheim an der Rhön, Germany. In addition to good-quality revolvers and an array of blank-firers, made since 1963, Schmidt makes a small 6.35mm 'Model 5' semi-automatic pistol with a six-round box magazine in the butt. These may be marked simply 'HS'.
- Schmidt** Moritz Schmidt; Zella Mehlis in Thüringen, Germany. Listed in 1930B9 as a master gunsmith.
- Schmidt** Paul Schmidt; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a maker of guns and weapons.
- Schmidt** Rob. Schmidt; Suhl in Thüringen, Germany. Trading in 1930 as a gunsmith.
- Schmidt** Rudolf Schmidt was born in Basel in June 1832, the son of a water-colourist. Joining the army in 1853, he obtained a commission two years later, was eventually promoted to the rank of colonel (*Oberst*) in 1887, retired in 1894 and died in 1898. He is remembered principally for a series of revolvers, culminating in the 1882-pattern 7.5mm army pattern, and the →Schmidt Rubin rifle of 1889. However, he was also responsible for the modernisation of the Swiss arms industry and the foundation of the →Eidgenössische Waffenfabrik in Bern.
- Schmidt** Theodor Schmidt; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a maker of guns and weapons.
- Schmidt** E. Schmidt & Habermann; Suhl in Thüringen, Roschstrasse 1 (in 1940B1). Founded in 1886? This gunmaking business was owned in 1900 and 1914 by Richard, Franz and Paul Stadelmann; by 'Franz & Paul Stadelmann' in 1920B30; and by Paul Stadelmann alone in 1939. Schmidt & Habermann were responsible for a unique short action →Mauser pattern rifle known as the 'Model 21'. Offered only in 6.5×54, 8×51 and .250–3000 Savage chamberings, it had a special knurled cocking piece knob and a simplified safety system. The company also offered Mauser pattern sporting rifles, often identified only by a small 'S & H' mark (cf., 'S & K').
- Schmitt** Listed in 1892 at rue Gambette 32, Saint Étienne, France, this gunmaker was one half of Schmitt et Freyssinet. Still trading in 1933 as 'Schmitt frères'.
- Schmitt et Freyssinet**; place de l'Hôtel de Ville 5 and rue du Treuil 9, Saint Étienne, France. Listed in 1879 as a gunmaker.
- Schnabel tip** See also 'fore end'. Occasionally rendered colloquially as 'snobble'.
- Schneider** Alfred Schneider; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a master gunsmith.
- Schneider** Edmund Schneider; Zella Mehlis in Thüringen, Germany. Listed in 1920–30 as a gunmaker.
- Schneider** Eduard Schneider; Zella St Blasii in Thüringen, Germany. Listed in 1900 as a gunmaker.
- Schneider** Ernst Hugo Schneider; Zella Mehlis in Thüringen, Germany. Listed in 1920–30 as a gunmaker and in 1939 as a distributor of guns and ammunition.
- Schneider** François Eugène Schneider; France. See 'Snider'.
- Schneider** Gustav Schneider; Zella St Blasii and Zella Mehlis in Thüringen, Germany. Listed in 1900B20 as a gunmaker and engineering workshop, when

- owned by Rudolf Schneider. Listed as a gunmaker until 1945.
- Schneider** Hermann Schneider; Zella St Blasii and Zella Mehlis in Thüringen, Germany. This gunmaker was listed in 1914–39, but ceased trading at the end of the Second World War.
- Schneider** Max Schneider; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a gunmaker.
- Schneider** M. & R. Schneider; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a master gunsmith.
- Schneider** R. Schneider; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a gun stock maker.
- Schneider** Rudolf Schneider; Zella Mehlis in Thüringen, Germany. Listed in 1930–2 as a maker of guns and weapons. Possibly the same as ‘R. Schneider’, above.
- Schneider** Rudolf Schneider; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a gun stock maker.
- Schnell** George C. Schnell, sometimes listed as ‘Snell’, was a U.S. government arms inspector. Working in the first decade of the twentieth century, he accepted equipment marked ‘GCS’. See also “U.S. arms inspectors’ marks”.
- Schnellfeuerpistole**—‘rapid-fire pistol’. This term was applied to two selective-fire pistols made in the 1930s by Mauser-Werke AG, largely as a result of the introduction of similar →Astra, →Azul and →Royal patterns in Spain. The original Mauser pattern was credited to Josef Nickl (1933), but the perfected version was the work of Karl Westinger (1936); the former had a plain bar selector, whereas the latter had an oval plate. Production was comparatively small, as the modified ‘Model 712’ C/96-type pistols were inaccurately when the selector was set to fire automatically. They were, however, popular in China and the Far East! Guns of this type could be identified by the selector on the left side of the frame above the trigger aperture.
- Schnorrenberg** Wilh. Schnorrenberg; Suhl in Thüringen. A wholesaler of guns and ammunition active in Suhl in the 1890s.
- Schobbert** Henry Albert Charles Schobbert. Listed as a ‘merchant’ and possibly an importer of European made guns, this patentee (British Patent 20,578/07 of 1907) developed a repeating airgun. His address was then listed as ‘59 Darenth Hill, Stamford Hill, London N.’
- Schoch** Edward J. Schoch. A U.S. government arms inspector, working early in the twentieth century, Schoch accepted weapons and equipment marked ‘EJS’. See also “U.S. arms inspectors’ marks”.
- Schoettlin** Anna Barbara Belzner Schoettlin; 121 Richardson Avenue, Jefferson, Alabama, U.S.A. This ‘Gentlewoman’ was the co-patentee of an airgun with her brother Nathan →Price.
- Schofield** Frank H. Schofield, a lieutenant in the U.S. Navy working c. 1895–1905, accepted →Gatling Guns and →Colt and →Smith & Wesson revolvers marked ‘FHS’. See also “U.S. arms inspectors’ marks”.
- Schofield** George W. Schofield. A major in the U.S. Army, Schofield obtained U.S. Patents 116,225 of 20th June 1871 and 138,047 of 22nd April 1873 to protect

improvements in revolver design. The guns were made in substantial numbers by Smith & Wesson as the →Schofield Model. Schofield committed suicide with one of his own revolvers in 1882.

Schofield Model Made by →Smith & Wesson in accordance with patents obtained by Major George Schofield of the U.S. Army, this revolver had a simplified extractor and a latch on the standing frame instead of the barrel extension. The U.S. Army had purchased more than eight thousand Schofield Smith & Wessons by the end of 1879, but these were unable to challenge the Colt →Single Action Army revolvers and nothing more was done.

Schön A. Schön; Suhl in Thüringen, Germany. Listed in 1920 as a gunsmith, and in 1930 as a gunmaker.

Schönauer Otto Schönauer. Born in 1844 in Reichraming, in Austria-Hungary, Schönauer underwent a gunsmithing apprenticeship before working for →Vetterli in Switzerland. In 1868, he was invited by Josef →Werndl to join Waffenfabrik Steyr; his subsequent career included promotion to head of the inspectorate (1889) and factory manager (1896). Though renowned most for his skills as an administrator, Otto Schönauer also designed bolt-action rifles and the rotary or 'spool' magazine associated with the perfected →Mannlicher-Schönauer. He died in Steyr on 17th September 1913.

Schönberger pistol Among the earliest auto-loading handguns, though still the subject of controversy, this was tested by the military authorities in c. 1895. The name appears to have been provided by the promoters, the Schönberger brothers of Vienna, though the design was due to Josef →Laumann. The operating system has been debated on many occasions, as some writers have identified it as a delayed blowback while others have claimed it to be an example of primer actuation. In addition, the date of introduction is also vigorously contested. Though Austro-Hungarian authorities were happy to test handguns such as the Schönberger, the →Kromar and the →Salvator-Dormus, few were efficient enough. Better designs eventually prevailed, such as the →Borchardt, the →Mauser-Feederle, and the →Mannlichers.

Schorn Gunsmith Josef Schorn (1909-69) of Koblenz Lützel, Germany, was granted DRP 763786 of March 1943 to protect a selective fire modification of the →Parabellum pistol. Alterations were made to the sear bar, and a pivoting selector lever was added in the trigger plate.

Schouboe Danish inventor Jens Theodor Suhr Schouboe (sometimes mistakenly identified as 'Jens Tørring Schouboe') was responsible for the →Madsen self-loading rifle and machine-gun, and for the idiosyncratic blowback pistol with which his name is most commonly associated. The machine-gun was the subject of British Patent 17877/02, sought on 14th August 1902 and accepted on 2nd June 1903; Austro-Hungarian Privilegium 14857, accepted on 1st September 1903, was just one of many comparable grants. The pistol relied on an ultra-lightweight bullet attaining high velocity (and hence good theoretical striking energy) to overcome the reluctance of many military authorities to test guns which lacked mechanical breech-locks. Protection granted to the handgun

included British Patent 28490/02 (sought on 31st December 1902, accepted on 12th February 1903); Austro-Hungarian Privilegium 13950; and French patent 326927.

Schoverling & Daly, subsequently 'Schoverling, Daly & Gales', of New York City, distributed guns and ammunition in the second half of the nineteenth century. In 1888 the partnership, which then included Gales, purchased the gunsmithing and distributing business of John P. Moore of Broadway, New York (established in 1823).

Schroeder, Salewski & Schmidt were the grantees of a U.S. patent (December 1856) protecting a needle gun. Immigrant German gunmakers Herman Schroeder, Louis →Salewski and William →Schmidt are credited as the designers, the guns being made in Schmidt's workshop in New York. Turning a lever on the right side of the fore-end simultaneously down and back allowed a rack-and-pinion mechanism to move the barrel away from the breech and cocked the needle mechanism. Prototypes tested by the U.S. Army performed as badly as the few that were sold as sporting guns. Schroeder patented an improved version in June 1861, but the project was overtaken by better designs.

Schubarth Caspar D. Schubarth or 'Schuberth'; Providence, Rhode Island, U.S.A. A gunsmith active in 1855B68.

Schuch Paul Schuch; Suhl in Thüringen, Germany. A gunsmith trading in Suhl in 1939.

Schuetzen, Schützen This term, which means 'marksmen' in German, is applied to a particular type of target shooting (and, by extension, target rifle) originating in central Europe and then popularised in the U.S.A. in the nineteenth century. The rifles usually have elaborate set triggers, palm rests beneath the fore ends, exaggerated cheek pieces and combs, hooked butt plates, and fully adjustable sights.

Schuetzen Junior Model Offered only for the .32-40 or .38-55 Ballard cartridges, the 1884 vintage No. 10 →Ballard target rifle was essentially the same as the No. 8 →Union Hill pattern, but had a heavy octagonal barrel and an 800 yard vernier back sight.

Schuetzen Model Known as the 'Off Hand Model' when it was introduced in the U.S.A. in 1876, the heavyweight No. 6 →Ballard rifle was intended for →Schuetzen style target shooting. Most guns had a double set trigger system, Marlin's short or mid range vernier peep back sights, and hand made straight wrist 'German' style butts with a nickel plated hook pattern shoulder plate. Chamberings ranged from .32-40 Ballard to .44-75 Ballard.

Schuetzen Match Rifle Built on the →Remington-Hepburn or →Hepburn-Walker action, the 'No. 3 Schuetzen Match Rifle' (1904B7) had a scrolled trigger guard, a vernier wind gauge peep sight on the tang, and straight-wrist butt with a shallow cheek piece. It chambered cartridges ranging from .32-40 Ballard to .40-65 Remington.

Schüler August Schüler; Suhl in Thüringen, Germany. Listed in the 1900 edition of the *Deutsches Reichs-Adressbuch* as a gunmaking business, owned by Friedrich

Schüler and his son Oskar. Friedrich retired in 1912, to be succeeded by his son Oscar and grandson Richard. Some products will be found marked 'ASS'.

Schüler August Gottlieb Schüler; Suhl in Thüringen. A gunmaking business claiming a foundation date of 1850.

Schüler Friedrich Wilhelm Schüler; Suhl in Thüringen. A gunmaking business claiming to have begun operations in 1835.

Schüler Oscar Schüler & Sohn; Suhl in Thüringen, Germany. Trading in 1930 as a gunmaker and sales agency.

Schüler Oscar & August Schüler; Suhl in Thüringen. Founded in 1880; usually listed as a weapon-maker (*Waffenfabrik*). It was superseded c. 1900 by August Schuler (above).

Schüler Oscar & Richard Schüler; Suhl in Thüringen, Germany. This gunmaking partnership, perhaps only active in 1912–13, offered →Mauser action sporting rifles made by →Sempert & Krieghoff. Richard Schüler (below) succeeded his father, though the original trading name may have been retained until the end of the First World War.

Schüler O. & F. Schüler Söhne; Suhl in Thüringen, Germany. Listed as a gunmaker, 1900.

Schüler Richard Schüler; Suhl in Thüringen, Schillingstrasse 1 (1941). Claiming to have been founded in 1913, succeeding Oscar u. Richard Schuler (q.v.), the activities of this mechanised weapon- and ammunition-making factory at Roschstrasse 13 continued until the end of the Second World War. Richard Schüler specialised in →Mauser-action rifles chambering a variety of proprietary cartridges—beginning with an 11.2×60 dating from 1913 and progressing to a huge 12.7×70 in the early 1920s. Made for Schüler by →Sempert & Krieghoff, these rifles were large and heavy, with the magazine box protruding from the fore end ahead of the trigger. The last Schüler round, 6.5×68, appeared in the early 1930s.

Schulhof Josef Schulhof, born in Dolní Kalná in 1824, had an interesting career. The son of a tenant farmer on the great Esterhazy estates in Hungary, Schulhof exhibited considerable repairing agricultural equipment. This encouraged him to relinquish his farming tenancy in 1870 and move to Vienna. Schulhof is remembered for a series of extraordinary repeating rifles with magazines in their butts, originally adapted from →Vetterli actions but later specially built in Austria and Belgium.

¶ The 1882 pattern rifle had a thumb trigger on the stock wrist and a multiple tandem column magazine encased in the butt. This was improved in 1883, retaining the basic principles of its predecessor, but with a simpler '5+4+1' magazine, an interrupted thread locking system and a conventional trigger.

The failure of the butt magazine system discouraged Schulhof sufficiently to substitute a five round rotary pattern adapted from Spitalsky's. The 1887 pattern gun was made in Liège—possibly by →Pieper—and had a turning bolt action with two locking lugs. Tested several times in Austria-Hungary, but rejected each time of grounds of needless complexity and expense, the guns

were never successful; a target pistol, however, was good enough to sell in quantity. Schulhof died in Heitzing on 11th June 1890.

Schüller A. Schüller; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a gun stock maker.

Schüller Otto Schüller; Zella Mehlis in Thüringen, Germany. Founded in 1884; listed in 1920 as a gun stock maker, and in 1930B9 as a master gunsmith and gun stocker.

Schulte Al. Schulte, Herbrüggen-Gewehrfabrik; Zella St Blasii and Zella-Mehlis in Thüringen. The Zella manufactory supplied a gun-distributing business based in the Ruhr, in a small town close to Essen. The business was listed in the 1914 edition of the *Deutsches Reichs-Adressbuch* as a 'gunmaker' and lasted until the end of the Second World War.

Schulte Charles Schulte. A member of the London gun trade, operating from 25 Moorgate Street in 1871–2.

Schultze Gunpowder Company; 28 Gresham Street and 254a Gray's Inn Road, London, and Eyeworth Lodge, Hampshire. This business was registered in July 1868 at 3 Bucklersbury, London, to perfect a semi smokeless wood base propellant invented by a Prussian army officer, Hauptmann (Captain) Johannes Eduard Schultze. The directors were C. Dale, R.W.S. Griffith, V.T. Mitchell and H.T. Withers. Schultze had visited Britain in 1864, at the suggestion of the gunmaker James D. →Dougall the Elder, but negotiations took some years for the project to become a commercial reality. Even then, it took many years of research and the substitution of wood fibres for cubes before the propellant was stable enough to be used in small arms ammunition. From 1880, however, business grew steadily. Improved forms of the propellant were introduced in the early 1900s—'Imperial' in 1902, 'Cube' in 1908, 'Popular' and 'Lightning' in 1912B13. Prior to 1909, Schultze seems to have relied greatly on cases provided by →Eley Brothers, but the short-lived →Cogschultze Ammunition & Powder Co. Ltd (active c. 1909–11 only) changed the source of components until Schultze was acquired by →Eley Brothers in c. 1912. However, a vestige of independence was retained by the formation of the 'Schultze Co. Ltd' (below). Among the many shotgun cartridges loaded under the Schultze banner from 1899 onward were 'The Albion', 'The Bomo', 'The Captain', 'The Caro', 'The Conqueror', 'The Eyeworth', 'Grand Prix', 'The Pickaxe', 'The Torro', 'The Westminster' and 'The Yeoman'. Most also bore a Registered Trademark in the form of a clenched fist holding a bolt of lightning. Though these often bore 'S.G. Co.' in the headstamps, most had been made with components supplied by →Eley Brothers.

Schultze Co. Ltd ['The...']; 28 Gresham Street, London, and Eyeworth, Hampshire (?). This was the post-1912 incarnation of the Schultze Gunpowder Company (above), owned by →Eley Brothers. Among the new products introduced in the 'post-Eley' period were the Popular and Lightning propellants, dating from 1912 and 1913 respectively. Trading continued independently throughout the First World War—a change of name to 'The Schultze Gunpowder Co. Ltd' occurred in 1916 to emphasise British origins—until the formation of →Explosive

Trades Ltd and →Nobel Industries. It has been claimed that Schultze-branded cartridges were being made as late as 1923, and some of the names were ultimately perpetuated by →Eley-Kynoch to heighten the confusion.

Schultz & Larsen; Otterup, Denmark. This gunsmithing business, specialising in custom-made sporting rifles (often built on wartime Czechoslovakian M24 or German Kar. 98k →Mauser actions), also supplied 8×58R bolt-action carbines or Rigspolitikarabiner m/42 to the Danish state police during the German occupation of Denmark in the Second World War. These had tubular receivers with large oval ejection ports, and one-piece stocks that extended to the muzzle. Some post-war sporting and target rifles were built on an improved form of this same action.

Schuman, Schumann George W. Schuman(n), U.S. arms inspector. See 'George W. →Sherman'.

Schütt: Hans Schütt oHG. See 'Bayerische Sportwaffenfabrik'.

Schutzmann A brand name and trademark associated with Albrecht →Kind, often accompanied by a three-quarter perspective view of a moustachioed pistoleer.

Schuyler, Hartley & Graham; Maiden Lane, New York, U.S.A. These wholesalers advertised themselves in 1871 as distributors of 'Every description of Sporting Guns, imported on Reasonable Terms; Powder Flasks, Shot Pouches, Washing Rods, and Implements of every description requisite for the Sporting Field; Agents for Caps, Wads, Metallic Cartridges, &c., manufactured by the Union Metallic Cartridge Company, Bridgeport, Connecticut' Schuyler, Hartley & Graham were sole U.S. Agents for several British and European gunmakers, including W.W. →Greener of Birmingham, and sold large numbers of Smith & Wesson →Russian Model revolvers in the 1870s. It was succeeded by →Hartley & Graham c. 1877.

Schwab Elias Schwab, one of the leading gunmakers established in →Weipert in Bohemia (then part of Austria-Hungary), was one of the principal members of a co-operative formed in 1887 to produce components for the straight-pull →Mannlicher service rifle that had been adopted for the Austro-Hungarian army. Little else is known of his operations.

Schwarte & Hammer This gunmaking partnership traded from 6 Lime Street, London, from 1885 until 1900 or later.

Schwarzlose Andreas Wilhelm Schwarzlose, born in Altmärkisches Wust on 31st July 1867, is one of the more interesting of the pre-1914 German firearms inventors. Unlike contemporaries such as →Mannlicher and →Mauser, whose reputation depended largely on the perfection of a single design—and then often with the help of others—Schwarzlose was always prepared to try something different. The son of a farmer, Schwarzlose served in the Austro-Hungarian artillery in the 1890s, graduating from the army ordnance school and then, after leaving military service, from the technical college in Suhl. Testimony to the fertility of Schwarzlose's mind is provided by a range of pistols produced in the 1890s, culminating in a military or '1898' pattern which was so nearly a great success. He also developed the only blow-forward design to

find commercial favour, selling several thousand in Europe before rights were hawked to North American interests prior to the First World War. The inventor died on 18th April 1936.

Schwarzlose A.W. Schwarzlose GmbH. Formed in Berlin early in the twentieth century, this gunmaking business made the blow-forward pistols patented by Andreas →Schwarzlose in 1907. It is also believed to have made the prototype Schwarzlose machine-guns, though volume production was licensed to →Österreichische Waffenfabriks-Gesellschaft. The factory was closed soon after the end of the First World War, though machine-guns and machine-gun parts were still being made in Sweden and Czechoslovakia as late as 1930.

Schwarzlose machine-gun This had been perfected by 1902. Compared with the recoil-operated →Maxim, the delayed blowback mechanism was extremely simple. It was easy to make and proved to be reliable once the rapid opening of the breech had been delayed sufficiently. The experimental 1905-type gun was superseded by the perfected short-barrelled Maschinengewehr M. 07. Made under licence by →Österreichische Waffenfabriks-Gesellschaft, the Schwarzlose M. 07 and M. 07/12 machine-guns not only survived the Austro-Hungarians until the end of the First World War, but also equipped the postwar Austrian, Hungarian, Czechoslovakian and Yugoslav armies. Large numbers had been made under licence in Sweden and the Netherlands even before the First World War began, and a few 'M1912' guns in 6.5×54 had been supplied to Greece prior to 1914.

Schwarzlose pistols Andreas Schwarzlose obtained a variety of patents protecting his earliest handgun designs, including British Patents 23,881/92 of 27th December 1892 and 9490/95 of 1895. The former protected what has been described as an automatic form of the Remington →Rolling Block, with the cartridges contained in the frame, whereas the latter was a more conventional long-recoil design locked by a rotating bolt.

¶ The first Schwarzlose to encounter success was the 'Standart' or 'Military Model', patented on 25th January 1898 (no. 1934/98), which chambered the 7.63mm Mauser cartridge and was apparently made in Suhl c. 1898–1900 (perhaps by Waffenfabrik von →Dreyse). Locking lugs on the bolt were disengaged when the barrel recoiled, allowing the bolt and its tubular housing to reciprocate alone. The principle was efficient, but sales were poor; remaining stocks are said to have been sold to Russian revolutionaries in 1905.

¶ An unsuccessful toggle-locked gun patented in 1900 was followed by the 7.65mm Schwarzlose of 1908, the only →blow-forward pistol ever to achieve commercial success. Several thousand were made by A.W. Schwarzlose GmbH in Berlin before the project was transferred to the →Warner Arms Corporation in 1911 to allow the Berlin facilities to concentrate on machine-guns. The earliest guns have grooved-breech barrel blocks and a grip-safety mechanism; later ones, often bearing the patent dates (13th April and 24th August 1908), have diced barrel-blocks and radial safety levers.

Schwarzwalder Jagd und Sportwaffenfabrik: see →Voetter & Co.

Schweizer Karl August Schweizer of Stuttgart, Germany, trading from Werrastrasse 81 in 1925, advertised his services as a wholesaler of guns and ammunition (particularly the products of →Simson & Co. of Suhl) and an ability to supply to order 'all kinds of guns and accessories'.

Schweizerische Industrie Gesellschaft (SIG) was founded in Neuhausen am Rheinfall in 1853, to make railway rolling stock and signalling equipment. The first guns were single-shot →cap-lock muzzle loaders, but these were soon followed by bolt-action →Vetterli M1869 rifles, M1870 cadet rifles and M1871 short rifles for the Swiss federal army, production of the 1869-pattern Vetterli alone totalling nearly sixty thousand. A 'Neuhausen' straight-pull bolt action rifle was developed to compete with the Schmidt-Rubin in the late 1880s, but failed to convince the authorities of its merits. However, SIG subsequently made components for the Schmidt-Rubin rifles and →Parabellum (Luger) 06/29 W+F pistols, though these guns were assembled by the →Eidgenössische Waffenfabrik in Bern. SIG made a few 6.35mm one-hand cocking automatic pistols in accordance with the →Chylewski patents.

¶ SIG has been involved in the development of many weapons, including the →Mondragon bolt-action and semi-automatic rifles designed prior to the First World War, and has also made Furrer-type submachine-guns. Among the most successful of co-operative ventures was that undertaken with Charles Petter, best known for an adaptation of the →Browning dropping-barrel lock (patented in France and Switzerland in 1934–7). The experimental SP44/8 and SP44/16 was refined into the SP47/8, adopted as the Swiss Ordonnanzpistole 49 SIG in 1949. Sold commercially as the SP 210, in a variety of guises, this pistol has been a great success. However, it was so expensive to make that SIG progressed to the P220—the Swiss Ordonnanzpistole 75—in 1975. Developed in collusion with J.P. →Sauer & Sohn, to evade strict Swiss arms-exporting laws, this gun has evolved into a series of improved guns: the compact 9mm P225; the P226 of 1980, made for trials in the U.S.A., with ambidextrous controls; the ultra-compact 9mm P228 (1988); the .40 S&W P229; and the deep-framed P239, available in .357 SIG, 9mm Parabellum or .40 S&W. The P230 (and a modernised substitute known as the P232) is a blowback personal defence pistol inspired by the Walther PP; once available additionally in .22 LR rimfire and 6.35mm Auto, the guns are now available only in 7.65mm Auto and 9mm Short. The P240, developed with Hämmerli (which SIG now owns) was a short-lived target-shooting adaptation of the P220, chambered for .32 S&W Wadcutter or .38 Special ammunition.

¶ SIG has also made large numbers of automatic rifles, including the SG 46, a gas-operated adaptation of the Schmidt-Rubin, and the extraordinary →blow-forward AK 53. Success awaited the perfection of the AM-55, customarily credited to Rudolf Amsler and now better known as the Sturmgewehr Modell 57 ('Stgw. 57', its Swiss army designation) or SG510. The SG510 series contained the 510-1, a commercial variant of the Stgw. 57 chambered for the Swiss 7.5×55 cartridge; the 510-2, a lightened variant of the 510-1; the 510-3, chambered

for the Soviet 7.62×39 round; and the perfected 510-4, introduced in 1963/4 in 7.6×51 NATO. A semi-automatic sporting version of the SG 510-4, the AMT, was also made in small numbers.

¶ An attempt to adapt the basic mechanism to become a gas-operated locked-breech chambering the 5.56×45 cartridge, the SG530 (1967–71), proved to be a failure. Far more effectual was the SG540 series (1972), offered in 5.56mm and 7.62mm, which incorporated a rotating bolt. The SG543 was licensed to →Manurhin of Mulhouse, the first guns being made for the French special forces and export to French colonies in 1978.

¶ After several years of trials, including competitions against a rival design promoted by the Eidgenössische Waffenfabrik, the SG550 (1984) was accepted for service as the 5.56mm Sturmgewehr 90, re-equipment stretching from 1986 to 1995. This gun has since been offered in a variety of guises, including the PSG550 sniper rifle, the SG551 carbine, and the ultra-compact SG552 Commando. Bolt-action sniper rifles have been offered on the basis of the →Sauer Model 80 wedge-lug and Model 200 turning-lug actions, as the SSG2000 and SSG3000 respectively; these have been chambered exclusively for the 7.62×51 NATO round or its commercial .308 Winchester equivalent. The basic flap or roller-locking system has also been incorporated in a variety of machine guns, beginning with the MG55 and culminating in the MG710. However, production of these has ceased.

¶ SIG continues to prosper, making a variety of packaging machinery and rolling stock. The company has controlling interests in both Hämmerli and Sauer. However, comparatively little has been written about its affairs.

Schweinsruckenschaft: see 'Stock'.

Schwertanker ('sword-anchor'). A description of the central component of a trademark granted in 1928 to Heinrich →Krieghoff Waffenfabrik of Suhl. See 'H K'.

Scoffin & Wilmot; Ironcrete Works, Barking By-Pass. A maker of magazines for the British 9mm →Sten Gun during the Second World War. The regional code 'S 103' may have been used instead of the company name. See also "British military manufacturers' marks".

Scolaire: see 'Buffalo-Scolaire', 'Gras-Scolarie', 'Populaire-Scolaire'.

Scope Gun A lever action →Daisy BB gun, introduced in 1961. Basically a No. 102 with a 'lightning loader', it also had a permanently attached 2× telescope sight.

Scoremaster or 'Model 511A Scoremaster' Made by the →Remington Arms Company in 1940B1 and 1945B62, this was a repeating version of the Model 510 with a detachable five-round box magazine.

Scoremaster, usually as 'Score Master': a variant of the →Government Model Colt-Browning M1911A1 pistol made by →Detonics. Inc., of Bellevue, Washington. An essentially standard gun, it features an extended grip safety, adjustable sights, a refined trigger and stainless-steel construction. See also 'Service Master'.

Scorpio This six-shot .38-calibre personal-defence revolver was made in Spain by

→Llama–Gabilondo SA. It was simply a heavier version of the →Piccolo with chequered grips and a rounded trigger guard.

Scorpion A break barrel .177 or .22 spring air pistol made in Britain by →BSA Guns Ltd. Designed in 1973B5, it was introduced commercially in 1977.

Scotcher John A. Scotcher & Son; Bury St Edmunds, Suffolk. The marks of this gunsmithing business, claiming origins as early as 1803, have been reported on shotgun ammunition made by →Eley Brothers prior to the First World War, including 'The →Invincible'. John Adam Scotcher was listed at 17 Meat Market from 1863, expanding the business to include his son by 1885, but work ceased when the stock and goodwill was acquired by Henry →Hodgson in 1913.

Scotia ['The...']. A mark found on shotgun ammunition sold by Alex →Martin of Glasgow; the manufacturer seems to have been →Eley-Kynoch, dating the products later than 1920.

Scott A →Suicide Special revolver made in the U.S.A. by the →Hopkins & Allen Arms Company of Norwich, Connecticut, in the late nineteenth century.

Scott Alfred Scott; London. The marks of this English gunmaker have been reported on self cocking →pepperboxes dating from the middle of the nineteenth century.

Scott Gustavus H. Scott, a commander in the U.S. Navy, accepted →Colt cap-lock revolvers marked 'GHS'. His work seems to have lasted from 1858 until the 1870s, its date and navy connotations distinguishing it from that of Gilbert H. →Steward. See also "U.S. arms inspectors' marks".

Scott Horace Scott, a government arms inspector operating c. 1879–90, accepted guns and equipment marked 'HS'. Care is necessary to distinguish his work from that of H. →Saunders, Harrison →Shaler, Harris →Smith, Howard →Stockton and H. →Syrett; though the periods differ, overlaps are to be expected. See also "U.S. arms inspectors' marks".

Scott Walter Scott, or 'W.W. Scott'. Trading from 47a Princip Street, Birmingham, Warwickshire, in 1871–80, where he was best known as a merchant of →Smith & Wesson and de →Moulicie revolvers, Scott was a licensee of the →Carter & Edwards bolt action breech loader. He received British Patent 1691/71 of 28th June 1871 for a hinged breech block and a proprietary recoil pad for shotguns; and was also the co designer, with W.J. →Matthews, of a breech system protected by British Patent 138/73 of 13th January 1873 and U.S. Patent 144,870 of 25th November 1873. This consisted of a screwed plug which could move laterally to expose the chamber. A later patent—British no. 3079/73 of 1873, jointly with A.E. →Bruno—protected a rifle sight.

Scott William Scott. This English gunmaker was listed in the census of 1841 at Henry Street, Stepney, London. He traded from 27 Leman Street, London E, in 1843–9 and then from 33 Leman Street (probably the same premises, renumbered by the post-office authorities) from 1851 until 1853. It is suspected that he then moved to Birmingham, where a 'William Scott' was listed at 14 Whittall Street from 1855. This business became 'William Scott & Son' in 1859, when a move to 47 Princip Street took place, and then 'William Scott & Sons' in

1869. Trading ceased in 1875.

Scott William Middleditch Scott, a partner in W. & C. Scott of Birmingham, was granted patents protecting a broad range of improvements in firearms. They included British Patent 2752/65 of 25th October 1865, protecting cocking indicators and a locking mechanism for drop barrel breechloaders; 452/70 of 1870 for a drop barrel action; and 1268/70 of 1870 for drop down barrel and gun stock construction; 2052/74 and 3424/74 of 1874 for drop barrel actions; 186/75 and 1902/75 of 1875 for drop barrel actions; and 3223/75 of 1875 for loaded chamber indicators. British Patent 615/76 of 1876 was granted to W.M. & M. Scott for a drop-barrel action, and 761/78 of 1878, to W.M. Scott & T. →Baker, was similar. Patent 617/82 of 1882 (also with Baker) allowed claims for vent design; 3859/83 of 1883, granted in partnership with C. Proctor, and 5564/84 of 1884 (sought alone) also protected drop barrel actions. Among the protection granted in U.S.A. were U.S. Patent 108,942 of 1st November 1870, for a drop-barrel gun; 157,699 of 15th December 1874 for a fore-end attachment system; 161,559 of 30th March 1875 for a drop barrel gun; 264,773 of 19th September 1882 (with T. →Baker) and 288,670 of 20th November 1883 (with C. →Proctor), also for drop-barrel guns.

Scott William & Charles Scott. Based in Birmingham, these gunmakers were eventually absorbed into →Webley & Scott. They began trading from 11 Lench Street in 1840, then moved successively to 33 Lench Street and 21 Loveday Street (1842–8), 4 Shadwell Street (1849–54), 94 Bath Street (1855–63) and Bagot Street (1864–97). An office was also maintained for some years from 1873 at 10 Great Castle Street, London. W. & C. Scott were best known for their good-quality shotguns, many being exported in the second half of the nineteenth century. They often incorporated features designed by William M. Scott (q.v.). In 1897, however, the business was acquired by P. Webley & Son to form the →Webley & Scott Revolver & Arms Co. Ltd, and lost its autonomy.

Scott & Sargeant; East Street, Horsham, Sussex, England. The marks of this ironmongery business have been reported on sporting guns and shotgun ammunition marketed shortly after the end of the Second World War as ‘The →Horsham Special’ or ‘The →Ironmonger’.

Scotti Alfredo Scotti—the son of Luigi Scotti [Douglas], Conte della Scala di San Giorgio, once chief technician in the Pirotecnico di Bologna—built a number of experimental rifles in a small factory in Brescia, Italy, relying on a short-stroke piston gas system to operate a rotating bolt. They included a range of auto-loading rifles of which the Modelo X of 1931 was the most successful. It was made either as a rifle, stocked in the fashion of the clip-loading Mo. 1891 Mannlicher Carcano; as a carbine with a separate pistol grip behind the trigger; or as a ‘naval anti aircraft rifle’, with a detachable box magazine and a pistol grip on the fore-end.

Scottie [‘The...’]. A mark found on shotgun cartridges distributed by J.S. →Sharpe of Aberdeen, usually accompanied by an illustration of a Scots Terrier.

Scout A British push in barrel air pistol, marketed by Lincoln →Jeffries & Co. Ltd

early in the twentieth century.

Scout An airgun pellet made in Britain by →Eley Brothers, introduced prior to 1910.

Scout A push-in barrel spring air pistol made by →Millard Brothers of Motherwell, Scotland.

Scout A break-barrel spring air rifle in 4.5mm calibre, made by Maschinen und Apparatebau →‘Wagria’ of Ascheberg in Holstein, Germany.

Scout A →Suicide Special revolver made in the U.S.A. by the →Hood Firearms Company of Norwich, Connecticut, in the late nineteenth century.

Scout An airgun made by the →Crosman Arms Company of Fairport, New York State, U.S.A., as the ‘Model 788 BB Scout’.

Scout The old type Model 75 →Daisy spring-air BB gun, a lever-action design made in the 1950s.

Scout A 500-shot lever action →Daisy BB gun made in 1955–61, basically a No. 102 →Cub fitted with sling swivels and a plastic butt and fore end.

Scout, or ‘Model 1300C Scout’ was a →Parker Hale type Mauser rifle introduced by the →Gibbs Rifle Company in 1992. Offered only in .243 and .308 Winchester, it had a short barrel, a laminated stock and a detachable box magazine.

SCR A superimposition-type monogram with the ‘R’ dominant. Correctly ‘SRC’ (q.v.); associated with →Sears, Roebuck & Company.

SCR Found on U.S. military firearms and accessories. See ‘Stephen C. →Rowen’.

SCS A superimposition-type monogram with ‘S’ dominant. See ‘CSS’; used by C.S. →Shatuck.

S. & D. Found on a range of →Record-brand shotguns being promoted in 1911 by A.L. →Frank, these initials have yet to be identified.

SE A superimposition-type monogram, ‘S’ slightly dominant. See ‘ES’; found on a Belgian or Spanish-made revolver.

Sealed Pattern Unique to the British armed forces and their colonial counterparts, this term denotes government acceptance. It has been used since 1631 to describe military stores deposited in the Tower of London and subsequently the Royal Small Arms Factory, Enfield, to ensure that equipment was manufactured to a standard pattern.

¶ A method of regulating a chaotic system which allowed individual gunmakers to supply weapons of their own design, instead of complying with government demands, took the form of a wax seal—in the form of the Royal Arms—applied to guns and other stores approved or ‘sealed’ to guide manufacture. As a ‘Sealed Pattern’ gun was deemed to be dimensionally correct, all manufacturing patterns and gauges had to comply with it.

¶ The wax seals were often set into gun butts, which could also bear additional information stamped into the woodwork; after the 1870s, however, the seals were customarily attached to wax and calico tags. No deviations were allowed from the Sealed Pattern unless agreed by the Board of Ordnance or the War Department, and the British inspectorate ensured that the rules were applied with unbending strictness.

- SEAM or S.E.A.M.:** a Browning type pistol made by or more probably for →Sociedad Española de Armas y Municiones of Eibar; 6.35mm or 7.65mm, six rounds, hammer fired.
- Sear** An intermediate component or series of components ('sear train') linking the trigger with the hammer or firing pin, holding the latter back until released by trigger pressure.
- Searle** Elbert Hamilton Searle; Springfield, Massachusetts, U.S.A. Searle is better known as the designer of the →Savage semi-automatic pistol, but was also responsible for the →Bull's Eye Pistol—an airgun with a special ratchet cocking system. See U.S. Patent 959,889 of 1910 and British Patent 12,723/10 of 1910.
- Searle** Thomas Searle. This member of the London gun trade was listed at 23 Jermyn Street in 1869B71.
- Sears** Henry Sears & Company; 88 Lake Street, Chicago, Illinois, U.S.A. A dealer in sporting guns and ammunition, Sears also loaded shotgun cartridges for a few years in the late nineteenth century.
- Sears** Robert Sears, a colonel in the U.S. Army Ordnance Corps, accepted a variety of .22 and .45 →Colt-made pistols during the Second World War. They bore 'RS' marks. See also "U.S. arms inspectors' marks".
- Sears Ranger:** see 'Ranger'.
- Sears, Roebuck & Company;** Chicago, Illinois. This retailing business had its origins in the Sears Watch Company, formed in 1886 in Minneapolis, Minnesota, by Richard Warren Sears (1863–1914). A move to Chicago occurred in 1887, when Alvah Roebuck was hired as a watch-repairer. A mail-order catalogue promoting watches and jewellery soon followed. Sears sold-out to Roebuck in 1889, intending to farm land purchased in Iowa, but then, in partnership with Roebuck, formed 'Sears, Roebuck & Company' in 1893; Julius Rosenwald and Aaron Nusbaum bought Roebuck's shares in 1895, and Rosenwald assumed control when Sears left the business in 1909. General Robert E. Wood was elected to the Board in 1924, marking a move towards retail operations that, by the 1970s, had grown to more than eight hundred stores. Sears Roebuck has handled a wide variety of guns and ammunition. Brand names have included 'A.J. →Aubrey', 'J.C. Higgins' and 'Ted Williams'; 'X-R' has been found in →headstamps, and 'Sta-Clean' has been reported on cartridge-boxes.
- SEB** Found on U.S. military firearms and accessories. See 'Stanhope English →Blunt'.
- Section Technique de l'Artillerie:** see 'STA'.
- Securitas** This strange little 6.35mm →blowback pistol, made in France prior to 1914 (?), had a finger-rest instead of a trigger guard. Fired by a lever set into the back strap, it is believed to have been made by →Société Française d'Armes Automatiques de Saint-Étienne. See also 'Hermetic' and 'Wegria-Charlier'.
- Sedgley** Reginald F. Sedgley, Inc., of Philadelphia, Pennsylvania, U.S.A., made and patented some remarkably compact revolvers. He also converted thousands of Krag-Jørgensen rifles to sporting use, and made flare pistols.
- Seeber** August Seeber; Suhl in Thüringen, Germany. Listed in directories for

1930–9 as a gunmaker.

Seecamp Louis Seecamp: see 'Mossberg'.

Seecamp L.W. Seecamp & Co. Inc.; New Haven, Connecticut, U.S.A. Makers of a range of automatic pistols, including the LWS 32 (7×65mm).

Seelig Georg Seelig; Weimar. A minor retailer of sporting guns and ammunition, active in Germany in 1941.

Seidenzahl Richard Seidenzahl; Suhl in Thüringen, Germany. Listed in the Deutsches Reichs Adressbuch as a gunsmith, 1930 and 1939.

Seitzinger Robert Seitzinger; Suhl in Thüringen, Germany. A gunsmith known to have been operating in 1939.

Selecta Made by Echave y Arizmendi of Eibar, this Browning type pocket pistol had a seven round box magazine and was hammer fired. The slide may be marked 'Model 1918', and a grip safety mechanism is sometimes present.

Select Armes; 3 rue de Roubaix, Saint Étienne, France. Listed in 1951 as a gunmaker.

Selector (sic) A semi-automatic pistol made by →Echave y Arizmendi of Eibar prior to the Spanish Civil War of 1936–9. See also 'Selecta'.

Selective fire A term applied to any gun which may, when required, be set (with the 'selector') to fire single shots, multi-shot bursts or fully automatically. The selector is often combined with the manual safety catch.

Selector: see 'selective fire'.

Self-cocking A firing mechanism in which the action of cocking the hammer or firing pin is performed automatically either by the breech mechanism or by pulling back the trigger (cf., 'double action'). Note that it is not released automatically, but instead requires an additional stimulus.

Self-loading See 'auto loading'.

Self-Protector ['The...'] A twin barrel pistol knife made by →Unwin & Rodgers of Sheffield, Yorkshire, England, with as many as four blades. These generally had twin triggers. A few guns had a distinctive false breech, which had to be lifted before the extractor could be activated.

Sellier & Bellot; Prague (Austria-Hungary prior to 1918, Czechoslovakia thereafter). This partnership of emigrant Parisian chemist Jean Bellot and merchant Louis Sellier began making percussion caps in Prague in 1825. By the 1860s, Sellier & Bellot were making metal case cartridges, and by 1914 had risen to become one of Austria Hungary's most powerful munitions makers. Cartridges were customarily distinguished by 'S.B.' or 'S. & B.' in their headstamps. Work continued until 1945, small arms ammunition being made during the Second World War in factories in Vlasim (coded →ak), Schönebeck an der Elbe (→ad), and the Veitsberg district of Prague (→lkm).

Selly Cartridge Company, U.S.A.: details needed.

Semi automatic This term is customarily applied to a gun which fires once for each pull on the trigger and reloads automatically, but requires the firer to release the trigger lever before another shot can be fired (cf., 'automatic').

Semin Co-designer with →Elizarov of the Soviet 7.62×39 intermediate or 'M43' cartridge chambered in the →Simonov carbine (SKS), →Kalashnikov assault

rifle (AK) and light automatic weapons such as the →RPD and →RPK.

Semi-rimmed case: see 'cartridge case'.

Sempert This German gunsmith/engineer was a partner in →Sempert & Krieghoff.

Sempert & Krieghoff began trading in Suhl in 1886, intending to make firearms and electrical components. The founders were Ludwig Krieghoff the Elder (q.v.) and an otherwise obscure Germano-American who had worked with Thomas Edison. Listed in the *Deutsches Reichs-Adressbuch* for 1900 as a gunmaking business, owned by Ludwig Krieghoff alone. Sempert & Krieghoff acquired V.C. →Schilling & Co. of Suhl in 1904, gaining an interest in the production of German Mauser service rifles, but Heinrich Krieghoff left the business in 1916 to begin trading on his own. Sempert & Krieghoff traded independently until 1924, when the death of Ludwig Krieghoff brought work to an end. However, Heinrich Krieghoff (q.v.) perpetuated the use of the 'S.u.K.' or 'S & K' marks on sporting rifles and shotguns. →Mauser action sporting rifles were stocked for general sale, and also for supply to August →Schüler of Suhl. An 'S. & K.' mark customarily identified them (cf., 'S. & H.'). Sempert & Krieghoff were still being listed in 1941 at Rimbachstrasse 37 in Suhl, but ceased trading at the end of the Second World War.

Senator A →Suicide Special revolver made by the →Meriden Arms Company of Meriden, Connecticut, in the late nineteenth century.

Sendero A version of the →Remington M700 bolt-action rifle, introduced in 1994, with a heavy 26in barrel and a stright-comb composite half-stock with a grey./black mottle finish. Chamberings have included .25-06, .270 Winchester, 7mm Remington Magnum and .300 Winchester Magnum. Introduced in 1996, the Sendero SF has a non-reflecting 'Satin Finish' on its fluted barrel and stainless-steel action.

Seneca Green A name applied to a short-lived version of the →Remington →Nylon 66 auto-loading rifle with leaf-green synthetic butts and fore-ends. See also 'Apache Black' and 'Mohawk Brown'.

Senior A barrel cocking spring air pistol made (in two 'Marks') by →Webley & Scott in .177 and .22; the former dates from c. 1964. An essentially similar pistol was made by →Mahely Industria y Compania in Buenos Aires, c. 1953-65.

Senn Heinrich Senn (1871-1958) of Bern, Switzerland, then a government arms inspector, was granted German Patent 310,499 of 31st October 1916 to protect a modification of the →Parabellum pistol which could fire automatically when required. A bipod, a water cooled barrel sleeve, and a large capacity box magazine were amongst the optional features.

Sentinel A break-open BB gun made in the U.S.A. in 1909-15 by the →Markham Air Rifle Company, with a →Polley type frame and a sheet metal trigger guard. The 'Sentinel Repeater' was similar, but had a repeating device controlled by the muzzle cap.

Serdyukov Co-designer with →Kraskov of the silenced submachine-gun and rifle—often known as the →ASS and →VSS respectively.

Serre; Saint Étienne, France. Listed in 1933 as a gunmaker.

Serrifile, Inc., U.S.A.: see 'Browning'.

Service, usually as 'The Service': found on shotgun ammunition handled by Charles →Hellis & Sons of London and →Norman → Son of Woodbridge and Framlingham. Made by →Eley-Kynoch, they will bear 'ICI' headstamps.

Service Kit Gun, or Model 650. Dating from 1982–7, this →Smith & Wesson swing-cylinder revolver derived from the standard →Kit Gun, but chambered .22 Magnum rimfire ammunition instead of the Long Rifle pattern. A heavy 3in barrel, fixed sights and a round-heel butt were standard. See also 'Target Kit Gun'.

Service Mark 2: associated with a lifting barrel spring air rifle made by →Webley & Scott Ltd of Birmingham in 1929–40 (though a few were assembled from pre war parts in 1945–6.) It was marketed in .177, .22 and .25, often in cased sets with interchangeable barrels.

Service Master: a variant of the →Government Model Colt-Browning M1911A1 pistol made by →Detonics, Inc., of Bellevue, Washington. It has an extended grip safety and a refined trigger; construction is usually in stainless steel. See also 'Score Master'.

Service Model Ace Chambered for .22 rimfire ammunition, this served as a trainer for the .45 M1911A1 →Government Model pistol. It was made from 1937 by →Colt's Patent Fire Arms Mfg Co., work ceasing in 1945. The minimal recoil of the .22 cartridge was magnified by a →floating chamber to approximate to that of the .45 ACP round.

Sesquicentennial Guns made by the →Remington Arms Company made in 1966 to celebrate the 150th anniversary of the founding of Eliphalet →Remington's business. The 'Model 552 Sesquicentennial' was a version of the auto-loading M552 →Speedmaster with an appropriate logo on the left side of the receiver. The 'Model 572 Sesquicentennial' was a →Fieldmaster slide-action rifle with an inscription lay on the left side of the receiver. The 'Model 760 Sesquicentennial' was a variant of the centrefire Model 760 →Gamemaster, made in small numbers in .30–06 only. These guns had engraved receivers. The 'Nylon 66 Sesquicentennial' was a variant of the standard .22 rimfire →Nylon 66 auto-loader, with an appropriate inscription on the left side of the receiver. See also 'Bicentennial'.

Sestroretsk arms factory, Russia/U.S.S.R. Though small-scale facilities had existed on this particular site for many years, Sestroretsk did not participate in the mass-production of military weapons until a production-line installed to make →Mosin-Nagant rifles began operating in 1894 under the supervision of Sergey Mosin himself. The factory thereafter made millions of weapons, including the pre-Revolutionary →Fedorov Avtomaty. Its importance declined under Bolshevik control.

Setra A pneumatic rifle similar to the U.S. made →Sheridan, but made in Spain. They were brought into Britain in small numbers by →Salter & Varge and may be found with appropriate marks.

Setter, usually found, as 'The Setter', on 12-bore shotgun cartridges supplied by

- Eley Brothers or →Kynoch Ltd prior to the First World War to W.R. →Pape of Newcastle-upon-Tyne.
- Setter** A 28-bore pneumatic shotgun made by →Armibrescia in the late 1930s. A pneumatic rifle of the same type may also exist.
- Set trigger** A mechanism, commonly used on target guns, in which a lever or button ‘sets’ the trigger by taking up all the slack in the system; thereafter, a very slight pressure on the trigger is sufficient to fire. Set triggers come in many differing designs, some of which combine the function of the setting and trigger levers in a single component.
- Sevart** Lambert Sevart; 16 rue Grandgagnage, Liège. A gunmaker working in Belgium from the 1880s until the First World War.
- Severn** [‘The...’]. A mark associated with shotgun cartridges handled by Aubrey →Lewis of Luton.
- Seydel & Company** Probably merchants and gunmakers’ agents, this business was recorded at 72 St Mary’s Row, Birmingham, in 1877–9.
- Seyffarth** Fritz Seyffarth; Zella-Mehlis in Thüringen. A gun- and gun-barrel making business (*Gewehrlaufzieherei*) operating in Germany in 1920–45.
- Seytre** M. Seytre; Saint Étienne, France. Known to have been trading in 1933, this gunmaker was basically a distributor of sporting guns, including the 6.35mm →Union or ‘Union–France’ automatic pistols purchased in Spain.
- Seytre Montagny** or ‘Seytre et Montagny’; Saint Étienne, France. Listed in 1933 as gunmakers; still trading in the early 1950s from 68 rue Mulatière.
- SFAP**: ‘Société Française des Armes Portatives’—see ‘Hotchkiss’.
- SFB** Found on U.S. military firearms and accessories. See ‘S.F. →Bugbee’.
- SFM, S F M** or **S.F.M.** Marks found in the headstamps of cartridges made by →Société Française des Munitions.
- SFM** A mark found on the grips of a 7.65mm five-shot revolver with a folding trigger and a swing-out cylinder, credited to →Société Française des Munitions but probably made either in Liège or Saint-Étienne.
- S.F.R.J.**, usually accompanied by a five-point star. ‘Socialist Federal Republic of Jugoslavia’, found on the grips of M48 →Tokarev pistols made for export to English-speaking countries.
- SG**, also known as the ‘SG-43’, this is an abbreviated form of *Stankoviy Goryunova*—‘heavy Goryunov’. This identified the 7.62mm SG machine-gun designed by Petr →Goryunov and his associates during the Second World War, and used in large numbers by the Soviet armed forces. See also ‘SGM’.
- S.G. Co.** A mark found on shotgun cartridges loaded with propellant supplied by the →Schultze Gunpowder Company.
- SGM, SGM...** An improved or ‘modernised’ form of the →Goryunov machine-gun (SG or SG-43), this appeared in the 1950s. It was eventually replaced by the PK, but showed itself to be sturdy and reliable. The SGMB was a flexibly-mounted vehicle gun derived from the →SGM, with spade grips, and the SGMT was a fixed-mount tank variant.
- sgx** This code is said to have been used by E. & F. →Hörster of Solingen on bayonets

and small arms components made in Germany in 1945.

SH *superimposition-type monogram, with neither of the letters dominant.* Correctly interpreted as 'HS' (q.v.); used by C.G. →Haenel of Suhl.

SH *sometimes in the form of a superimposition-type monogram.* Correctly read as 'HS' (q.v.); used by Herbert →Schmidt of Ostheim an der Rhön, Germany.

SH *usually in a diamond.* A trademark associated with →Schuyler, Hartley & Graham of New York City.

SH Found on U.S. military firearms and accessories. See 'Samuel →Hawkins'.

S&H or **S. & H.** Trademarks associated with →Schmidt & Habermann of Suhl, but readily confused with 'S&K' (q.v.).

Shaler Harrison Shaler, a U.S. government arms inspector, accepted .45 M1911A1 →Colt-Browning pistols made at the end of the Second World War by →Remington Rand. The guns were marked 'HS', but are easily distinguished—by their date—from those accepted by H. →Saunders, Horace →Scott, Harris →Smith, Howard →Stockton and H. →Syrett. See also "U.S. arms inspectors' marks".

Shamrock This trademark was used on shotgun cartridges and →Mayer & Grammelspacher 'Diana' spring-air rifles handled by Frank →Dyke & Co. Ltd of London in the mid 1920s.

Shannon, Ltd; Shannon Corner, New Malden, Surrey. A maker of magazines for the British 9mm →Sten Gun during the Second World War. The regional code 'S 309' may have been used instead of the company name. See also "British military manufacturers' marks".

Sharp Frank A. Sharp & Son; Poole, Dorset. This ironmongery business sold shotgun cartridges as "A Sharp's Express". Their origins are unknown.

Sharp William Lacy Sharp. An English gunmaker listed in East London at 7 Little Alie Street in 1839B50. Subsequent directory entries list 'Mrs H. Sharp' at the same address until 1856, suggesting that her husband had died in 1850 or 1851.

Sharp Rifle Company; Tokyo, Japan. Maker of a modified →Crosman pattern pneumatic rifle known as the 'Sharp Innova'. The loading system, consisting of an automatic plunger or bolt and a side mounted operating catch, differs radically from its prototype. Sharp has been owned by SKB (q.v.) since the 1980s.

Sharp's Express See 'Frank A. →Sharp & Son'.

Sharpe James S. Sharpe; Belmont Street, Aberdeen. The marks of this gun- and fishing-tackle maker have been found on sporting guns and shotgun ammunition, made by →Eley-Kynoch, which was distributed under the tradename 'The →Scottie'.

Sharpe & Wright; Diamond Buildings, Coombe Road, Brighton 7, Sussex. A maker of British rifle-type 'Projectors, Grenade, No. 5 Mk 1/L', 1944, allotted the code 'S 355'. See also "British military manufacturers' marks".

Sharps C. Sharps Rifle Company; Big Timber, Montana. This manufacturer offered a range of Sharps type rifles from 1987 onward. Since 1992, they have been distributed under the 'Montana Armory' name. The Model 1874 has been

offered in chamberings from .40–40 to .40–90, in the guise of Military Rifles, Military Carbines, Business Rifles, Sporting Rifles No. 1 and No. 1½, or Long Range Express Sporting Rifles. Announced in 1986, the Model 1875, patterned on the improved Sharps rifle, has a greatly simplified slab sided receiver and a shorter operating lever. Chambered for cartridges ranging from .22 Stevens to .45–90, it had a case hardened receiver, a round or octagonal barrel, and a straight wrist butt with a shotgun style shoulder plate. Individual patterns have included a Sporting Rifle, with a 30in octagonal barrel; a Saddle Gun with a 26in octagon barrel; a Carbine with a 24in round barrel and a half length fore end retained by a single barrel band; a Business Rifle with a 28in round barrel; and a 1991-vintage Target & Long Range Model with a long range vernier sight on the tang, an oval cheek piece, and a checkered steel shoulder plate.

Sharps Christian Sharps was the designer of a dropping-block mechanism reliant on a breech block which slid downward within a sturdy frame, protected by U.S. Patent no. 5763 of 12th September 1848 ('gun with sliding breech pin and self capping'); combustible cartridges were fired with a side-hammer → cap lock. The rifles attained undying fame in the hands of the United States Sharpshooters, who were issued with two thousand double-trigger guns in 1862.

Sharps John Brown Sharps: see under 'J'.

Sharps Arms Company Formed in 1967 to promote a much modernised → Sharps-Borchardt action, then acquired by → Colt. Unfortunately, the project was abandoned in the mid 1970s after less than five hundred actions had been made by → Bellmore Johnson. These were used to make presentation grade guns in chamberings ranging from .17 Remington to .458 Winchester.

Sharps-Borchardt rifle A sophisticated hammerless dropping-block breechloader, this was derived from the familiar Sharps system of 1848 by Hugo → Borchardt. It was protected by U.S. Patents 185,721 of September 1876 and 206,217 of 23rd July 1878, both being assigned to the Sharps Rifle Company. The action was designed to cock the striker automatically as the breech-block descended. A safety lever behind the trigger was applied as the breech was opened; when the action had been reloaded and closed, the firer could override the safety by pressing the projecting catch. Sharps made about 23,000 rifles, beginning in 1878, but the failure of the manufacturer in September 1881 brought work to an end. The guns were sold as the 'New Model Hammerless' Business Rifle, Express Rifle, Military Rifle and Carbines, Hunter's Rifle, Long Range Rifle, Officer's Rifle, Short & Mid Range Rifle, Short Range Rifle, and Sporting Rifle (qq.v.).

Sharps & Hankins; Philadelphia, Pennsylvania. Relations between the inventor Christian → Sharps and the manufacturer Richard → Lawrence were never particularly cordial and, eventually, the inventor sold his shares in the Sharps Rifle Mfg Co. and entered a partnership with William → Hankins. The new business intended to make sliding barrel rifles and four barrel .22, .30 or .32 rimfire sheath-trigger derringers, work continuing in Philadelphia until Sharps died in 1874. The carbine was protected by U.S. Patent 32,790, granted in July

1861 to protect a firearm loaded by sliding the barrel forward when the trigger guard lever was pressed. Production began in 1862, shortly before receipt of a U.S. Navy order for five hundred fully-stocked rifles chambering the '.52 Sharps & Hankins No. 56' rimfire cartridge and accompanied by sword bayonets. These were followed by the army or 'Old Model Carbine', chambering the same ammunition but with a short barrel and a half-length fore-end. The firing pin was fixed in in the hammer face. Post 1863 'New Model' carbines had a floating pin in the standing breech, and a safety slider on the rear of the frame. Guns of this type were used by the army and the navy, the latter being issued with a leather barrel-sleeve to prevent corrosion. Federal government acquisitions during the Civil War eventually acquired 7804 Sharps & Hankins carbines, 1468 for the army and 6336 for the navy, but many others were sold privately.

Sharps rifle The earliest designs, made to the 1848 patent by gunsmith Daniel →Nippes of Mill Creek, Pennsylvania, had a breech-block that moved obliquely. A primer-wheel in the frame ahead of the breech block, which could be removed once the cover had been opened. The guns had →back action locks and breech levers forged separately from the trigger guard. Octagonal barrels were retained by a lateral key, and a brass 'patch box' appeared in the butt.

¶ Later guns, made by →Robbins & Lawrence from 1850 onward, substituted the →Maynard Tape Primer. Most had iron mounts, an adjustable chamber bushing, and a special platinum alloy sealing ring in the breech block face to prevent gas leaks. Next came the 1851-pattern rifle, the first to have the breech lever combined with the trigger guard and the hammer inside the lock plate. The Maynard Tape Primer was retained, but the receiver was rounded.

¶ The 1852-pattern, made in rifle and carbine forms (sporting and military) in 1853-4, was essentially similar to the contemporaneous military issue, with the Sharps-patent disc primer system, with a tube of priming discs in a hole bored vertically in the lock plate. The guns incorporated the platinum ring gas check and adjustable chamber bushing, but had a angular receiver and a conventional outside hammer. Production, though meagre, included a few large-bore shotguns.

¶ The 1853-pattern rifle was also scarce, but may be found with barrels ranging from merely 14in to a stupendous 39in. Made by →Robbins & Lawrence prior to 1855 and then by the Sharps Rifle Company, the M1853 carbine had an improved breech lever pivot pin retainer. Production in Windsor and Hartford amounted to about 13000 1853-type guns. Two hundred guns rifles of this type were purchased by the U.S. Navy and the Marine Corps with half stocks, brass furniture, a single barrel band, and a bayonet-fitting tenon beneath the muzzle.

¶ The 1855-type carbine was made in answer to request from Britain, though several hundred .52-calibre examples were delivered to the U.S. Army. They had the →Maynard-patent tape priming mechanism on the right side of the receiver, and straight-necked hammers. Other guns of this type were the 1855-type Army Rifle, with full-length stocks, three bands and provision for a socket bayonet, and the essentially similar but half-stocked Navy Rifle. Fifty of the

latter had an unsuccessful self-cocking system designed by Rollin →White, linking the hammer with the breech lever.

¶ Trials had often showed that they leaked gas too badly to be acceptable; though the problems were eased when Sharps inserted a platinum ring in the breech block face, the first answer was provided by an expandable gas check ring patented on 1st April 1856 by Hezekiah →Conant of Hartford, Connecticut, and the final solution was an improved seal patented by Richard →Lawrence in December 1859.

¶ The perfected 1859-pattern or 'New Model' Sharps rifle had the improved Lawrence-type obturator, changes in the lock work, and a breech block that moved vertically. The U.S. Navy ordered the first of its .56 calibre rifles in 1859, with full length stocks, two barrel bands, and a bayonet-fitting tenon. Ordered by the Federal army from C.C. →Bean of New York in June 1861, 'Sharps Long Range Rifle with bayonets' was similar, but had three bands and customarily accepted socket bayonets locking around the base of the front sight. There was also an essentially similar →Sharpshooters' Rifle and a short-barrelled carbine with a tapering half-length fore end, held to the barrel by a single band.

¶ Revised New Model guns, marked MODEL 1863 on the barrel, can be identified by the sturdy bed of the back sight replacing the flimsy 'spring bed' of their predecessors. The patch box was abandoned in 1864, the remaining furniture being iron. The Civil War (1861-5) prevented Sharps from making sporting rifles in quantity, though more than 80,000 carbines and nine thousand rifles were purchased by the Federal government. The army inventory was nearly fifty thousand by the end of 1866, many being converted for metal case ammunition in the late 1860s.

¶ A few full length rifles were converted to fire metal-case ammunition, and others were remodelled to half stock design, but the Improved Breech Loading Sporting Rifle was the first purpose-built metallic-cartridge gun to offered by the Sharps Rifle Mfg. Co. Guns of this type, dating from 1866-71, were based on the 1863 type cap lock. An improved half-stock gun appeared in 1869, a cranked firing pin that allowed the side mounted hammer to ignite a centerfire cartridge, and a new extractor shared the axis pin of the operating lever. Chamberings ranged from .44 Berdan Short to .52-70.

¶ The U.S. Army trials of 1865 included two dropping block Sharps carbines with an auxiliary reciprocating extractor bolt protected by a patent granted in February 1867. In the autumn of 1867, therefore, the U.S. authorities signed a contract with Sharps to convert cap lock guns to take the standard .50-70 centrefire cartridge. Some guns had already been converted to accept a special rimfire round, based on the .56-50 Spencer pattern, but problems were solved only when Richard Lawrence perfected an 'S' shape striker that could be fitted within the existing breech block.

¶ The Model 1870 rifles, used in U.S. Army field trials, mated the barrels of 1863-type →cap lock rifle muskets, lined down from .58, with 'New Model' (1863 type) Sharps actions taken from existing carbines. The work was done in

→Springfield Armory in 1870–1. Most of the guns had fore ends held by two bands, though a few three band examples were also made, but there were also a few short-barrelled .56–50 carbines with half length fore-ends held by a single band. Essentially similar ‘Military Model’ rifles and carbines were offered by the Sharps Rifle Mfg Co. (1870–4) and the Sharps Rifle Company (1874–6 in Hartford, 1876–8 in Bridgeport). They could be based on the original (1869) or perfected (1871) sporting rifles.

¶ The 1871-pattern New Model Sporting Rifle could handle the most powerful sporting cartridges. The receiver was lengthened to form a loading tray, the firing-pin assembly was modified, the straightened hammer nose to strike the head of a firing pin set into the breech-block, and the breech-lever spring assembly was revised. About 25,000 were made by the Sharps Rifle Mfg Co. (1871–4). Chamberings ranged from .40 Berdan Short to .50–90 ‘Big Fifty’.

¶ The Model 1874 Sporting Rifle was identical with its predecessor, excepting for the new ‘Sharps Rifle Company’ name. Barrels could be round, half octagon or fully octagonal, double set triggers were common, and vernier sights could be supplied on request; pewter fore-end tips were characteristic. Production continued until 1881, many post-1875 examples chambering new straight-case cartridges designed specifically to help reloading. Rifles leaving the Bridgeport factory from 1876 onward had barrels marked OLD RELIABLE.

¶ Perfected sporting rifles were made in a variety of styles, the ‘Business Rifle’, the ‘English Model’, the ‘Hunter Rifle’, the ‘Long Range Rifle’ and the ‘Mid Range Rifle’. The standard Sharps-action guns were superseded by the hammerless Sharps-Borchardt (q.v.), but the original exposed-hammer patterns have proved very popular in recent years with manufacturers such as Pedersoli, the →Sharps Arms Company, and the →Shiloh Mfg Co.

Sharps Rifle Company; Hartford (1874–6) and Bridgeport (1876–81), Connecticut, U.S.A. In addition to the better known dropping block rifles, Sharps also made a few smooth-bore shotguns on the same basic action. A few ‘Old Reliable’ double-barrel hammer shotguns were sold from 1879 until business collapsed in 1881. Most of them seem to have been purchased from P. →Webley & Sons.

Sharps Rifle Manufacturing Company [‘The...’]; Hartford, Connecticut. The great success of the first Sharps firearms led to the formation of a manufacturing company in the autumn of 1851, production being subcontracted to →Robbins & Lawrence. Trading continued until 1874, when the original company was superseded by the Sharps Rifle Company (above).

Sharpshooter, usually as ‘The Sharpshooter’. A brand name found shotgun cartridges sold by W.J. →Jeffrey of London and Herbert →Lee of Bishop’s Stortford, usually made by the Midland Gun Company (headstamped ‘MG’ and ‘B’).

Sharpshooter or ‘Sharp-Shooter’. A name applied to a semi-automatic pistol made by Hijos de Calixto →Arrizabalaga. Protected by Spanish patent 68,027 (1917), the gun originally had an unprotected trigger and a barrel that could be tipped at the breech when the safety lever was rotated past the ‘safe’ position. This

allowed the bore to be inspected, or single rounds to be loaded. The first Sharp-Shooter lacked an extractor, spent cases being expelled by residual gas pressure; however, as this prevented the expulsion of unfired rounds, a conventional extractor was added in 1919. See also 'Jo-Lo-Ar'.

Sharpshooter A spring powered pistol, subsequently known as →Topscore, made in the U.S.A. for →Healthways, Inc. The Sharpshooter name was retained in Britain in the mid 1970s, when →Parker Hale was still distributing the gun.

Sharpshooter or 'Sharpshooter Cadet Rifle'. A name associated with the small calibre →Martini action training rifles supplied to Australia prior to 1914.

Sharpshooter, or "Sharpshooter's rifle". A variant of the 1859-pattern rifle made by the →Sharps Rifle Mfg Co., these issued to the regiments of United States Sharpshooters raised in 1861 by Colonel Hiram →Berdan. They had distinctive double triggers, and all bore the 'JT' in cartouche mark of Federal government arms inspector John Taylor.

Sharpsooter: see 'Sharpshooter'.

Shatuck Charles S. Shatuck; Hatfield, Massachusetts, U.S.A. This gunmaker received U.S. Patent 210,677 of 4th November 1879 to protect a revolver with a cylinder which swung out horizontally and then slid forward on its axis pin to eject spent cartridges. The name is often wrongly listed as 'Shattuck'.

Shatuck C.S. Shatuck [& Company]; Hatfield, Massachusetts. This gunmaking and engineering business made →Shatuck patent revolvers, and single barrel 'The →American' shotguns from 1880—in succession to →Hyde & Shatuck—until about 1908. It also made the multi barrel →Unique pistol, patented in 1906 by Oscar →Mossberg.

Shattuck George D. Shattuck. A Federal government arms inspector working during the American Civil War, Shattuck accepted cap-lock →Colt revolvers marked 'GDS'. See also "U.S. arms inspectors' marks".

Shatterer. A brand name associated with a revolver made in Belgium prior to 1914 by A. →Bertrand.

Shaul William Shaul. This English gunsmithing business was listed at 3 King Street, Tower Hill, London E., from 1890 to 1900 and possibly later.

Shaw George Shaw & Company, working from chambers at 35 Temple Row, Birmingham, Warwickshire, acted as a patent agent for inventors including Charles →Gardner, Arthur Henry →Hill, Edward Henry →Parsons, Leslie Bown →Taylor and Frederick →Williams—see British Patents 5495/06 and 2863/06 of 1906, 19,519/07 of 1907 and 19,445/08 of 1908.

Shaw George Shaw, Bowker & Folkes. This patent agency succeeded George Shaw (above) and moved from 35 Temple Row, Birmingham, to 8 Waterloo Street, Birmingham, in 1935. See British Patents 425,555 and 425,755, granted to Arthur Henry →Hill.

Shaw John Shaw; Glossop, Derbyshire, England. Listed in trade directories as a musical instrument maker, Shaw patented an elastic-band powered airgun in 1849 (English Patent 12728 of 1st August). A few guns were made by Henry →Holland in the early 1850s, though they used springs rather than elastic

bands to compress the air.

SHB Found on U.S. military firearms and accessories. See 'S.H. →Broughton'.

Shearing F. Shearing & Company. This business, a member of the English gun trade, was listed at 21 Water Lane, London E.C., in 1899–1900.

Sheldon Henry Newton Sheldon; Boston, Massachusetts, U.S.A. An inventor and/or patent agent, this man was involved in British Patent 23/76 of 1876 granted to Augustus →Bedford with the collusion of Allison Owen →Scott and James Rollin Marble →Squire.

Shelvoke George Edward Shelvoke; Britain. See 'Accles and Shelvoke'.

Shepherd Reginald V. Shepherd [Major]; co-designer with Harold Turpin of the British →Sten Gun.

Sheridan A multi-stroke pneumatic rifle, designed by Edward →Wackerhagen and Irwin →Krause, and made by →Sheridan Products, Inc., from 1949 onward. See also →Bimoco Sheridan Torpedo, →Blue Streak and →Silver Streak.

Sheridan Products, Inc.; Racine, Wisconsin, U.S.A. This company was formed by Edward R. →Wackerhagen in 1947, to exploit a high quality pump up airgun designed in 1946 in collusion with Irwin R. →Krause. The business was named after a prominent street in Racine. A large range of 5mm (0.2in) calibre rifles—pneumatic and gas powered—has been marketed under the brand names →Blue Streak and →Silver Streak, though a wide variety of models has been offered under each banner. Super Grade and Sporter rifles have also been made, as has the →Knocabout cartridge pistol. A solitary carbon dioxide powered pistol, designated 'EB', has also appeared in recent years.

Sheriff's Model Used generically for almost any short-barrelled 'Western style revolver', particularly a short-barrel version of the Colt →Single Action Army revolver, lacking an ejector, which was introduced about 1880.

Sheriff's Model Based on the →Single Action Army Model, about a thousand of these .45-calibre guns were made in 1961 by →Colt's Patent Fire Arms Mfg Co., with 'SM'-suffix numbers and 3-inch barrels lacking ejector-rod cases. They were followed by 4560 'Third Model' examples, made by the Firearms Division of →Colt Industries in 1980–5 for the .44–40 WCF or .45 Long Colt cartridges.

Sherman Charles E. Sherman. This government arms inspector, working in 1842–7 and possibly later, accepted military equipment marked 'CES'. A similar mark was used by Clarence →Simpson, but in a much later era.

Sherman George W. Sherman, sometimes listed as 'Schuman(n)', accepted →Colt Dragoon revolves for the U.S. Army shortly before the Civil War began in 1861. They were marked 'GWS'.

Sherman Maurice Sherman, a government arms inspector working in the early 1940s, accepted .45 M1911A1 →Colt-Browning pistols marked 'MS'. See also "U.S. arms inspectors' marks" for all three entries.

Shield Cartridge ["The..."] or "Page-Wood's Shield Cartridge". Associated with shotgun ammunition loaded from →Eley-Kynoch components by T. →Page-Wood of Bristol. The mark was accompanied by a shield containing the name and a drawing of a cartridge.

- Shilen** Edward 'Ed' Shilen and Shilen Rifles, Inc.; Ennis, Texas, U.S.A. This business was formed in 1961 to make gun barrels, progressing to rifles in the mid 1970s. Built on the proprietary DGA ('Damn Good Action') turn-bolt system, these have been offered in a variety of styles, such as 'Bench-Rest', 'Silhouette', 'Single Shot', 'Sporter' and 'Varminter'. More than seventy chamberings were being listed in 1988, ranging from .17 Remington to .458 Winchester.
- Shiloh Sharps** Originally known as 'Shiloh Products', trading in Farmingdale, New York, from 1976, this division of the Dovel Tool Company expanded to become the 'Shiloh Rifle Mfg. Co., Inc.' and moved to Big Timber, Montana, in 1983. It is now renowned for high-quality reproductions of →Sharps pattern dropping block rifles. These range from a re-creation of the →Business Rifle to a .45-70 'Montana Model' introduced in 1989 to commemorate the state centennial. A brief summary of the individual guns will be found in John Walter, *Rifles of the World* (Krause Publications, third edition, 2005).
- ShKAS** This was an aircraft machine-gun with an unusually high rate of fire, designed by Boris →Shpitalny and Irnakhr →Komaritsky in the early 1930s. It was accepted for service in 1933 and rapidly improved; most authorities now recognise several separate variants of the basic design. The 20mm →ShVAK was basically an enlarged version of the ShKAS, developed by →Voronkov from the basic design.
- SHT.L.E.** An abbreviated form of →Short Lee Enfield, encountered in designation marks.
- Shillito** Thomas R. Shillito. This British patent agency, which occupied chambers at 89 Chancery Lane, London, acted for Theodor →Hornhauer; see British Patents 7,932/95 and 23,188/95.
- Shiple** W.R. Shipley, a government arms inspector, working in the 1890s, accepted weapons and equipment marked 'WRS'. See also "U.S. arms inspectors' marks".
- Short & Mid Range Rifle** (Sharps): see 'New Model Hammerless Short & Mid Range Rifle'.
- Short Range Rifle** (Sharps): see 'New Model Hammerless Short Range Rifle'.
- Short Range Target Rifle** (c. 1876–90). This was similar to the Mid Range pattern, but had a short barrel chambered for cartridges ranging from 38 Extra Long to 46 Rimfire. An aperture sight was normally mounted on the barrel. See also 'Remington rifles, rolling-block action'.
- Short recoil:** see 'recoil operation'.
- Shorty** Also known as the 'Model 9404 →Plainsman Shorty', this gas-powered pistol was marketed by →Healthways, Inc.
- Shotgun** This term has been used to describe any long arm—customarily smooth bored—used to fire a charge of shot instead of a single heavyweight projectile. By the 1840s, the development of rudimentary self-contained cartridges and the earliest breechloaders (e.g., the pinfire →Lefauchaux) allowed the first real steps to be taken towards the modern shotgun. However, though the origins of their cartridges lay in France, most of the early advances towards the modern shotgun were made in Britain.

¶ The top lever is said to have been invented c. 1857 by Samuel →Matthews of Birmingham, who received a British Patent in October 1863. However, credit is usually given to Westley →Richards—whose British Patent 2149/58 of 24th September 1858 ante-dated Matthews' by some years.

¶ There was considerable variety among the earliest double barrelled guns. Some had barrels which slid forward (→Bastin system), others tipped downward (→Lefauchaux), a few moved laterally at the breech (→Jeffries), and guns such as the →Bacon relied on fixed barrels and sliding bolts. The biggest problem with the first moving barrel guns lay in the weak 'single bite' methods of locking the breech. The locking components were usually placed in the 'bar' or forward extension of the action ahead of the standing breech (or 'action face'). When the gun was fired, however, elasticity in the material allowed the breech to spring briefly and very slightly open. This problem grew steadily worse as the gun aged, even though gunmakers often incorporated self adjusting systems to reduce the effects of wear.

¶ Many methods were tried in an attempt to improve the locking system, including rotary underlevers and barrels which could be moved forward away from supporting discs on the action face before they were dropped—e.g., Dougall →Lock Fast breech. Eventually, in September 1862, Westley Richards patented the "Doll's Head", a small round headed tenon projecting backward from the top of the barrel block or 'lump'. When the action was closed, the doll's head was locked in a recess in the standing breech to additional support for the 'bites' in the action bar.

¶ The classical under bolt locking mechanism was added by James Purdey in 1863, while the 'Wedge Fast' system was perfected by William Greener in 1873 (British Patent 3084/73). Hundreds of proprietary variations had been patented by 1900, and treble-, quadruple- and even quintuple-bite locking systems were being touted by 1914. The →Greener Cross-bolt was particularly favoured.

¶ The earliest double barrel shotguns were fired by external hammers inspired by their cap lock predecessors, and often retained—in a debased form—the fences that had once enveloped the nipples. Some hammers rebounded, others hit spring loaded →inertia strikers set in the action face, and a few automatically retracted to half cock when the barrels were dropped. Attempts were soon made to eliminate the hammers in favour of modernised 'hammerless' locks, though these are often properly described as 'enclosed hammer'.

¶ The first truly successful hammerless shotgun, patented in 1871 by London gunmaker Theophilus →Murcott, was made in considerable numbers prior to about 1876; by 1900, the hammerless gun had largely overhauled hammer patterns. The earliest hammer guns were usually →back locks. Though a few →side-lock examples had been made in cap-lock days, locks of this type became popular only when hammerless shotguns were introduced and barrel-locking systems had been greatly refined.

¶ The →Anson & Deeley gun, patented in 1875, introduced the 'Body Action' or →box lock with the mechanism mounted directly into the breech housing

instead of being carried on separate detachable plates. The earliest shotguns were 'inert' or 'passive', requiring the firer to hold the components of the breech closed whilst he activated the locking mechanism. This wasted effort inspired gunmakers to produce →snap-action systems with breeches which shut automatically as the barrels were returned to battery. Shotguns of this type may also be →assisted opening or →self opening.

¶ Some guns ('ejectors') expel spent cases automatically and others can be set to do so when required, though many guns ('non ejectors') leave the firer to remove spent cases and unfired shells. Efficient single trigger systems capable of firing barrels sequentially or selectively, safety devices, and cocking/loading indicators have all been patented in large numbers.

¶ Most of the shotguns made prior to 1914 were drop barrel-designs with their barrels placed side by side. There were exceptions such as the fixed barrel French →Darne, which had a sliding breech, and the development of multi-shot →combination weapons encouraged the introduction of the →over/under (or 'superimposed') style. Though the majority of over/under guns are drop-barrel designs, exceptions such as the side-opening →Britte and the sliding-barrel →Bretton have been made. Single barrel guns have taken drop-barrel forms (hammer or hammerless, ejecting or non ejector) or the study fixed-barrel bolt action form which has found special favour in North America since the First World War. The multi-shot pump or →slide action gun was established by the Spencer-Roper guns, patented in the U.S.A. in 1882, or in the form of the first truly successful auto-loading shotgun patented by John Browning in 1900–4.

¶ Among the finest sources of information about shotguns are W.W. Greener's *The Gun and Its Development* (particularly the ninth edition of 1910); *The Modern Shotgun* by Major Sir Gerald Burrard (1931); and *The British Shotgun*, in two volumes, by David Baker & Ian Crudgington (1981).

Shot sizes The complexity of the system applied to →bore sizes ('gauge') is matched by the quirky method of classifying the diameters of shot, which apparently originated in the mesh sizes of the grading sieves. The standard sizes range from No. 12 Shot—with a diameter of merely .05in—up to No. 1 (.16), then to 'B' (.17), 'Air Rifle' (.175), 'BB' (.18) and 'BBB' (.19). The next series extends from 'T' (.20) to 'TTTT' (.23), followed by No. 4 Buck (.24) to No. 00 Buck (.33). 'TTT' and 'TTTT' sizes have also been known as 'F' and 'FF' respectively, and the most commonly encountered 'numbered sizes' are regarded as 2, 4–6, 7½, 8 and 9.

Shpagin Georgiy Semyenovitch Shpagin is now best known as the designer of the Soviet →PPSh, a submachine-gun introduced (and made in huge quantities) during the Second World War. Shpagin, born in 1897 in Klyushnikovo, near Kovrov, was drafted into the tsarist army in 1916 as a regimental armorer—skills he used to advantage as a gunsmith attached to a Red Army infantry regiment immediately after the 1917 Revolution. Discharged from military service in 1920, Shpagin joined the experimental workshop of the →Kovrov ordnance factory, where Vladimir →Federov and Vasiliy →Degtyarev were already employed. Georgiy Shpagin was involved in the creation of the 12.7mm

→DShK machine-gun, perfected in 1938, before developing the PPSH. Much of his wartime service was devoted to developing mass-production techniques for his submachine-gun in the factory to which he and many of his colleagues had been evacuated after the German invasion of the Soviet Union in 1941. Shpagin also designed signal pistols; much decorated, he died in 1952.

Shpital'nyy Boris Gabrielovich Shpital'niyy, born in Rostov-on-Don in 1907, graduated from the Moscow Mechanical Institute in 1927, specialising in the manufacture of machinery and tools for the aviation industry. Working in the Scientific Automotor Institute (NAMI), he created the →ShKAS 7.62mm high-speed aircraft machine-gun in collaboration with Irnakhr →Komaritskiy. This then laid the basis for the 12.7mm ShVAK. In 1934, Shpital'nyy was reassigned to head a Special Design Bureau studying the problems of fitting effectual large-calibre cannon in aircraft. He eventually became a professor in the Moscow Institute of Geodesy, Aerial Photography and Cartography, where he remained until 1953. Greatly honoured for his contributions to Soviet small-arms design, Shpital'nyy also experimented with submachine-guns. He died in 1972.

Shue Earl V. Shue; Milwaukee, Wisconsin, U.S.A. Patentee of a spring air break open BB gun on 30th June 1914 (U.S. Patent 1,102,904), very similar to the →Daisy of 1892.

Shue Air Rifle [Manufacturing] Company; Milwaukee and Neceeda, Wisconsin, U.S.A. This business was formed in 1914 to exploit the BB gun designed by Earl →Shue, though few (if any) survive. It reappeared in Neceeda in the early 1920s, claiming to have developed a powerful airgun and to have perfected a BB shot making machine, but disappeared for good in 1923.

Shue's Special A brand name associated with shotguns made by the →Crescent Gun Company.

Shuffreys Ltd, Wallsall, Staffordshire. The marks of this gun- and fishing-tackle distributor have been found on shotgun ammunition loaded by →Kynoch Ltd of Birmingham prior to 1914, including 'The →Beacon'.

Shuttleworth. S. Shuttleworth, a London-based gunmaker, was recorded in 1877 at 51 Bishopsgate Street Within, E.C.

SHW Found on U.S. military firearms and accessories. See 'Sheffield H. →Wright'.

SIA A superimposition-type monogram without dominant letters. Found on revolvers made (or perhaps simply distributed) in the U.S.A. by →Security Industries of America, Inc.

S.I.C.Co. This mark is found in the headstamps of ammunition made by (or perhaps for) the →Sportsman's International Cartridge Co. of Kansas City.

Sickels Arms Company A name found on shotguns handled by the H. & D. →Folsom Arms Co., possibly imported from Europe.

Side lock This term refers to a method of construction—originating in snaphance and flint lock days—where the main spring lay on the attachment or 'lock' plate ahead of the cock. This system was perpetuated on the first generation of military metallic cartridge guns, but found its greatest favour on double barrel shotguns even though the external hammers were soon replaced with

- enclosed hammers or internal strikers. Side locks remain popular on side by side doubles, particularly the best grades, because they give the engraver an ideal platform to display his skills. On over/under shotguns, however, the side lock has been almost universally superseded by the →box lock, even though, on high-quality over/unders, a false side plate is often used as a base for engraving.
- Sidem International SA** These Brussels-based agents for the original ArmaLite AR 10 rifle were responsible for sales made in Europe and North Africa, c. 1957B60.
- Side-plate lock:** see 'Side lock'.
- Side Snap** A name applied to a single barrel box lock central hammer shotgun made in the U.S.A. by Iver →Johnson from c. 1885 until the early 1900s.
- Sidorenko** Co-designer with →Malinovsky of the Sidorenko-Malinovsky tripod mount for the →SGM machine-gun.
- Siebelist** A. Siebelist & Co.; Goldlauter and Heidersbach bei Suhl in Thüringen. Said to have been listed in German trade directories as a wholesaler of sporting guns and ammunition, probably in the 1920s.
- Siebelist** Christian Siebelist; Suhl in Thüringen. A gunmaker trading in Germany in the early twentieth century.
- Siebert** Anton Siebert; Carlsbad, Bohemia (Austria-Hungary prior to 1918, Czechoslovakia thereafter). Maker of a crank wound volute spring airgun with a set trigger, c. 1850.
- SIG** An abbreviated form of 'Schweizerische Industrie Gesellschaft' (q.v.).
- SIG Hämmerli** Schweizerische Industrie Gesellschaft (SIG, q.v.) acquired the shareholding of the →Hammerli igunmaking business in 1971, but the latter has continued trading under its own name.
- SIG Sauer** A name denoting a co-operative venture between →Schweizerische Industrie Gesellschaft and J.P. →Sauer & Sohn GmbH. The original intention was to circumvent Swiss federal law and export handguns designed by SIG. The first of these were the P220, a modified →Colt-Browning with the barrel block locking into an open-top slide, and the P230 personal defence pistol. The P220 was adopted by the Swiss army as the '9mm Pistole M75', paving the way for a series of compact derivatives—P225 (9mm Parabellum, eight-round magazine), P226 (9mm Parabellum, fifteen rounds), P228 9mm Parabellum, thirteen rounds), P229 (.40 S&W, twelve rounds) and P239 (.357 SIG, 9mm Parabellum, .40 S&W, seven rounds). The general tendency has been to make these simpler, though improvements have been made in the trigger and safety systems, ambidexterous controls have been added, magazine capacities have been enlarged as far as practicable, and new chamberings have been offered. The P230 was offered in 7.65mm Auto and 9mm Short, but the former was abandoned c. 1985 and the latter when the improved P232 appeared in 1996. The SSG 2000 (1983) and SSG 3000 (1992) sniper rifles have also been offered on the basis of Sauer's bolt-action sporting guns.
- Sigaud;** Saint Étienne, France. Listed in 1933 as a gunmaker. Listed in 1951 as 'Sigaud Fils', with premises at 56 cours Fauriel.
- Sights, collimating** Though image intensifying sights have made tremendous

progress in recent years, they are still expensive compared with optical sights. Beginning with Singlepoint, introduced in the 1970s, attempts have been made to enhance snap shooting with sighting equipment which relies on an optical illusion. Collimator sights combine an aiming mark within the sight body, illuminated either by ambient light or by electrical batteries, with the ability of the firer's binocular eyesight to accommodate the reflected aiming mark and a view of the target simultaneously. Singlepoint appeared to be projecting a red dot onto the target and undoubtedly facilitated rapid fire, but few of these sights—even those with powered reticles—have proved to be of much use in darkness. Ambient light reflectors are also generally ineffective under dark to light conditions.

¶ Collimator sights lost favour for much of the early 1990s, even though the South African Armscor OES ('Occluded Eye Sight') and the Swedish AimPoint have been touted with vigour. However, FN Herstal is currently promoting a powered sight of this general class on its P 90 Individual Weapon.

Sights, electro-optical The first attempts to improve weapons sights relied on straightforward optical means, magnifying the image so that the target could be seen more clearly, but the gains were limited by the performance of the human eye—which receives electromagnetic radiation in the form of 'light' but can only resolve a tiny part of the spectrum. The visible band occupies an almost infinitesimal part of a total electromagnetic spectrum, ranging from radio waves at one extreme to gamma rays at the other, and thoughts soon turned to extending human sight by concentrating on the portion of the infra red spectrum nearest the visible band. The German vehicle control system known as *Fahrzeug Gerät 1229*, developed during the Second World War by the Forschungsanstalt der Deutschen Reichspost in collusion with Leitz of Wetzlar, presented the human eye with an otherwise unseen image by 'converting' radiation with wavelengths in the near infra red part of the spectrum. Resolution was initially very poor, until the problems were eased by adding an infra red lamp to flood the target area. However, this active system allowed an adversary equipped with a passive detector to see the infra red lamp without being seen. FG 1229 was soon adapted to become the *Zielgerät 1229* 'Vampir', which was tested on the Kar. 98k, Gew. 43 and MP. 43/Stg. 44. A 13cm diameter transmitting lamp accompanied a converter with a magnifying eye piece lens in a telescope like tube, but a separate battery-pack electrical supply was necessary. Vampir inspired the U.S.A. to develop the SniperScope, which was the first entirely self contained passive viewer to be successful. The greatest single advance made since the Second World War concerns the converter, which, helped by advances in technology and progressive miniaturisation, can enhance the image electronically. Most intensifier sights are essentially a television tube inserted in a telescope sight between the objective and eye piece lenses. Light from the target—natural or boosted by a floodlight—enters through the objective lens and is focussed onto the front element of the converter. Photons provided by the energy entering from the target image cause electrons to be

emitted from the converter's photo cathode and focused onto a phosphorescing screen that in turn emits the photons that reconstruct an image. The key to success was the degree of amplification, releasing as many electrons as possible for each initial photon strike. Though the cascade tubes of the first generation sights were very bulky, the inclusion of additional intermediate amplification stages gave surprisingly good performance and 60,000 fold gains were not uncommon. The major drawbacks of these first generation intensifier sights were expense, excessive size and the delicacy of the converter unit. Improvements in converters, which have now generally changed from cascade type photo cathodes to fibre optic micro channel plates, have allowed intensifier sights to be reduced to surprisingly compact dimensions. Their performance remains much the same as their predecessors (perhaps limited by maximum attainable image gain) and the optical components remain largely unchanged, but a considerable reduction in manufacturing costs has been reflected in price. Powered by two 1.5-volt AA batteries, the Pilkington Optronics Kite Night Sight offers 4× magnification. It is merely 255mm long, has a 73mm diameter objective lens, and weighs about 1200gm with its batteries. Intensifiers are at their best in conditions ranging from overcast starlight to full moonlight with light cloud cover. Full moonlight may bring excessive brightness and the beginning of black out, whereas overcast starlight or unbroken cloud cover may reduce even a third generation intensifier to impotence in woodland.

Sights, fixed ('iron') An appreciation of the curved trajectory of projectiles created multi setting sights, often in the form of standing plates pierced with several sighting holes. Folding leaf sights made an early appearance, and tube sights had become popular by the end of the sixteenth century. A sprung sight block sliding along a stepped elevator had also been tried long before it attained great prominence in the U.S.A. in the nineteenth century.

¶ Attempts had been made early in the eighteenth century to provide back sights which could be adjusted by screws either vertically ('elevation') or laterally ('drift' or 'windage'). These were generally made by instrument makers, however, and did not become common until improvements in machine tool design were made early in the nineteenth century.

¶ Back sight design remained surprisingly static for many years, largely because the performance of guns remained unchanged. The first real improvement came with the adoption of the self expanding ammunition that, virtually at a stroke, increased maximum effective range many times over and showed the need for more efficient sights. Fixed standing block sights were thereafter confined to short range weapons such as handguns and carbines; on infantry rifles, however, the leaf sight—usually combining a stepped base and a pivoting leaf or 'ladder'—became popular for more than a hundred years.

Commonly found in central Europe, particularly in Switzerland and southern Germany, the tangent sight had an arm that could be elevated either by turning a knob or by sliding a control block horizontally along its bed.

¶ Tangent and leaf type back sights were comparatively delicate and expensive

to make. The rise of close-range trench warfare in the twentieth century suggested that refinement was unnecessary, and 'battle sights' appeared. These were customarily set for only one or two ranges, but were sturdy and dependable.

¶ This simplification process may be seen in some late twentieth-century designs, but a compromise is usually accepted; the drum sight favoured by Heckler & Koch and the rocking 'L' of the FNC typify the balance that must be sought between ease of use and accuracy of setting. The open sights of the 1990s include standing notched blocks, vertically sliding plates controlled by finger wheels, multiple leaves pivoted on a single block, and the so called *Express sights*, which had a rank of several separately-pivoting folding leaves. The *Cape* [of Good Hope] *sight*—a useful, but apparently artificial designation—was a variant of the Express pattern with several small folding leaves and a large leaf and slider for longer ranges. The *semi-buckhorn sight*, with a sprung leaf and a notched elevator, remains popular in the North America. A flat spring bent into an open notch may be elevated by a sliding stepped plate; alternatively, a screw may raise the leaf. Sights of this type were once known as 'Rocky Mountain Sights' when fitted with a buck horn sighting notch.

¶ Tangent-leaf sights of differing forms are still used in large numbers, alongside aperture or 'peep' sights ranging from the simplest battle pattern to micro adjustable competition diopter sights with integral filters and adjustable irises. The finest target sights are made in Europe by Anschütz, Feinwerkbau, Grünel & Elmiger ('Elite' brand), Tanner, Walther and others. Front sights still generally consist of a simple ramp mounted blade or barleycorn (an inverted 'V'), often protected by a sheet steel cover, but luminous dots, coloured inserts and white beads may be added to improve contrast.

Sights, optical Coarse adjustment, poor regulation, and the excessive width of the front sight blade/back sight notch combination were highlighted when engagement distance stretched to 1000 yards or more. Initial attempts to satisfy long range requirements with pendulum, folding bar and elongated-ladder sights characterised a period when complexity could be mistaken as a mark of technological advance. A better solution was provided by the telescope, which had appeared early in the seventeenth century and become commonplace within a hundred years. The introduction of the first practicable telescope rifle-sight is not known with certainty, though a London gunsmith, Isaac Riviere, was offering them in the early 1830s and optically sighted target rifles had attained limited popularity in the the U.S.A. by the time of the American Civil War (1861–5). Major Davidson patented his optical sight in Britain in 1862, persuading the British Army to undertake a trial in conjunction with a .451 Whitworth cap lock rifle in 1865. Not until the 1880s were trials undertaken with vigour, but the sights were mounted far too high to be successful and their eye relief was poor.

¶ The modern optical sight is usually a seamless tube, with a diameter of 25mm or 30mm, drawn from aluminium or sheet steel. It can be anodised,

blacked, nickelled, chromed, or clad in rubberised armour. The barrel of the sight contains a series of lenses, a *reticle*, and a method of adjusting focus. Most modern lenses consist of several individual elements. The lens farthest from the shooter's eye, called the *objective*, forms the 'primary image'—which, but for the inclusion of a separate erector lens, would be inverted. The image passes out through the *eyepiece* to enter the pupil of the firer's eye. Optical sights normally magnify the image, but the final size may vary between a modest fifty per cent gain (1.5×) and a twentyfold increase (20×).

¶ Though problems are potentially very serious, manufacturing standards are surprisingly high and even the cheapest sights offer acceptable performance. A discussion of the many problems that can be associated with optical sights, from chromatic aberration to poor image brightness, may be found in *The Rifle Book* by John Walter (Arms & Armour Press, 1987). Sights are usually supplied with detachable lens caps, the translucent patterns doubling as filters for use on particularly bright days. Others will be encountered with range finding graticles and some even offer rubberised 'armour', which is very useful for field use.

¶ The British Army currently accepts 4× sights as the best compromise of magnification and field of view, but the Austrian AUG has a fixed-focus 1.5× pattern and the German H&K G36 has a 3× sight. Many leading gunmakers offer 'own brand' telescope sights, though virtually all are made by the same little group of manufacturers in Japan, and the differences among the sights are often simply markings and external finish. Zeiss and Schmidt & Bender in Germany, Kahles and Swarovski Optik in Austria are among the leading European manufacturers; Bushnell, Bausch & Lomb and Weaver still make their own lenses in the U.S.A., but no British manufacturers survive.

¶ Among the terms associated with optical sights are *anastigmatic*, indicating that an attempt has been to correct astigmatism; *achromatic*, for chromatic aberration (inability to focus light rays at a single point); *orthoscopic*, where image distortion has been minimised; and *aplanatic* if corrected for spherical aberration. A 'Relative Brightness' value may be obtained by dividing the effective diameter of the objective lens by the sight aperture and squaring the result; if a 6× telescope sight has an objective lens diameter of 40mm and a sight aperture of 5mm, therefore, its relative brightness is 64 ($40 \div 5 = 8$; $8 \times 8 = 64$). The human eye adjusts automatically to ambient light, but its iris diameter rarely exceeds 3mm in daylight and relative brightness greater than 9–10 is wasted: at dusk, the iris can expand to a little over 5mm for an optimal relative brightness of 25–30. Some large objective sights may provide relative brightnesses as great as 100, allowing the eye to see detail in conditions where ambient light is insufficient to satisfy even the fully opened iris.

Sights, target designating The basis of many modern targeting systems is a laser beam, though the details vary greatly from manufacturer to manufacturer. The principle of the laser (an acronym of 'Light Amplified by Stimulated Emission of Radiation') has been known for many years, but the first commercially practicable system was not perfected until the early 1960s. Individual atoms are

excited with a beam of light to generate additional radiation in phase with the light beam, which is thus reinforced. The results can be magnified to produce a beam of coherent (single-frequency) light of great power. This system has been widely touted as the 'death ray', but a more immediate benefit has been the development of continuous line projectors to assist in medicine or with surveying tasks. Lasers of this type, usually gas discharge patterns, inspired the development of laser designators or aiming projectors. Some designators operate in the visible spectrum, projecting a beam which can be seen by the firer and the target at all times, whilst others operate in the infra red bands and require a head set equipped with monocular intensifier type detector tubes. Designator systems undoubtedly improve shooting skills, particularly snap shooting, but the designator unit must be activated to obtain a sighting mark and proceeding too leisurely can encourage counter sniping. Restrictions are also placed on peripheral vision by head set construction.

Sights, thermal imaging Similar to intensifiers in many respects, these rely on a different operating system—reconstructing images from tiny differences in thermal emissions. Though these emissions are customarily absorbed or scattered by the atmosphere by the time they reach the firer, there are two principal 'windows' where they penetrate the atmosphere efficiently enough to allow good images to be reconstructed. Unfortunately, thermal imaging sensors need to be cooled continuously (often relying on liquid nitrogen) and are usually bulky. Officine Galileo offered a thermal imaging/image intensifying sight in the 1980s, which had the ability to superimpose the infra red and thermal emission images to improve performance, and development potential may still lie in multi system sights of this type.

Sigmund Pumps Ltd of Gateshead-on-Tyne, Northumberland, England, made drum magazines for the British .303 →Bren Gun during the Second World War. These were often marked with the code 'N 65' instead of the company name. See also "British military manufacturers' marks".

Signature, usually as "The Signature": associated with shotgun ammunition loaded for →Cole & Son of Devizes and Portsmouth.

Signature A brand name associated with rifles made from 1987 by →McMillan Gunworks, Inc., of Phoenix, Arizona. The Signature Classic Sporter (introduced in 1987), built on a →Mauser-type bolt action, chambered cartridges ranging from .22–250 to .375 H&H Magnum. The 'Signature Alaskan' (1989) had a folding-leaf back sight and nickel-plated metalwork; the 'Signature Mountain Rifle' (1989), in chamberings from .270 Winchester to .300 Winchester Magnum, had a titanium-alloy receiver and a black fibreglass stock; and the 'Signature Super Varmint' (1989), offered in options ranging from .220 Swift to .308 Winchester, had a heavy barrel in a specially bedded synthetic stock.

Silber & Fleming Ltd. was a merchants and gunmakers' agent, listed at '562, 62 & 71 Wood Street, and 7 & 10 Fell Street, London E.C., in 1886–90, and in Wood Street and London Wall in 1891–7.

Silencer A device attached to the muzzle of a gun—or, alternatively, incorporated

in its construction—whereby the gases emerging from the barrel are trapped, then circulated in expansion chambers to allow their temperature and pressure to drop before release to the atmosphere occurs. This prevents the usual noise of the muzzle blast. Silencers are rarely encountered on rifles, as the excessive muzzle velocity of most cartridges necessitates the use of special low power subsonic ammunition. The first practicable silencer was patented by Hiram Percy →Maxim in 1909 and made in quantity by the Maxim Patent Silencer Company.

Silesia Found in the headstamps of shotgun cartridges advertised in 1911 by A.L. →Frank; possibly made by →Munitionswerke Schönebeck.

Silhouette, or 'Model 29 Silhouette'. A .44 →Magnum revolver made in Springfield, Massachusetts, by →Smith & Wesson.

Silin Vladimir Silin. This Soviet inventor was responsible for a universal or general-purpose machine-gun based on the →Goryunov, but his prototypes were not acceptable.

Silvanus This brand name was found on shotgun cartridges made in Germany prior to 1914, probably by →Cramer & Buchholz.

Silver S.W. Silver & Company of London and Manchester distributed guns, ammunition, sporting goods and camping equipment. An insert in W.W. Greener's *Modern Breech-Loaders* (1871) advertised "The Explorer's Room", 66 & 67 Cornhill, London, as vital to 'Officers departing on Foreign Service, Explorers, Missionaries and Emigrants, [who] may, without the expenditure of valuable time, obtain every article of equipment required to meet the exigencies of Camp Life, Travel or Exploration'. Among the items offered were 'The Settler's Double Gun, Muzzle Loading, 11-bore..., shoots with either shot or ball Rifles, Revolvers, Kives, &c.'" Premises were listed at 2-4 Bishopsgate Within (the principal warehouse) and 100 Market Street, Manchester. Premises in Sun Court, Cornhill, London, were first listed in 1882. Additional premises in Old Bond Street were opened in 1890, and the directories for 1892-4 record Silver not only at Sun Court and Old Bond Street, but also at 11 Leadenhall Street and 15 Bury Street, St Mary Axe. By 1895, however, only 67 Cornhill was being used, where the business remained when the trading style became 'S.W. Silver & Co. & B. Edgington Ltd' in 1899. Silver's marks will be found on shotgun and sporting-rifle ammunition, usually loaded by →Eley Brothers.

Silver Jet An airgun pellet similar to the obsolete British →Lane's Triumph, made by →Hasuike Sasakusho of Osaka, Japan. See also 'Jet'.

Silver Ray ['The...']. A mark reported on shotgun ammunition made in Birmingham by the →Mullerite Cartridge Works.

Simarin Anatoly Alexeyevich Simarin was co-designer with →Lev Kulikov and Tikhon →Lashnev of the Soviet 5.45mm →PSM automatic pistol. Born in 1936 in Krasnoye, in the Tula district, Simarin graduated from the Tula Mechanical Institute in 1957 and was immediately assigned to a design bureau. He has been credited with developing the first single-stroke pneumatic pistol to be made in the USSR, and also participated in the development of the SMP-3 nail-driving

gun powered by a .22-calibre blank cartridge. Simarin, Lashnev and Kulikov developed an efficient rapid-fire target pistol in the late 1960s, which became the mainstay of Soviet shooting teams for many years; this gun inspired work on the small-calibre PSM. Anatoliy Simarin died suddenly in 1991.

Simco A short lived pneumatic rifle made by the →Sims Rifle Company until the early 1950s.

Simon Gebrüder Simon; Schmalkalden in Thüringen, Germany. This gunmaking business, active in the period between the world wars, specialised in target and hunting rifles. It is often mistakenly linked with the →Simson family of Suhl.

Simonds Frank A. Simonds; Grand Rapids, Michigan, U.S.A. Co-patentee of a spring air BB Gun with Chauncey H. →Fisher and Hugh C. →Ross, U.S. Patent xxxx of 13th December 1901. This was subsequently exploited by the →Rapid Rifle Company.

Simonis Albert Simonis; Liège. A Belgian-based gunsmith active prior to the First World War. A founder member of les →Fabricants d'armes réunis, 1886, and of →Fabrique Nationale d'Armes de Guerre in 1889. A maker of revolvers from the 1870s onward.

Simonov Sergey Gavrilovich Simonov was born in 1894 in the village of Fedotovo, near Vladimir, into the peasantry and apprenticed to a blacksmith at the age of sixteen. After working for a small engineering business, Simonov moved to the Kovrov machine-gun factory in 1918. By 1929 he had become 'Senior Master Gunsmith' and head of the assembly shop, and his talents as a designer had soon been recognised. From 1933 until his retirement in 1950, Simonov headed several design bureaux in Soviet ordnance factories. His first designs, for a light machine-gun and an automatic rifle, were crested in 1922–3 but had no lasting effects on the small-arms of the red Army; more successful were the →Simonov automatic rifle (AVS) of 1936, the first automatic rifle to be adopted in the Red Army since the Fedorov Avtomat, and the →Simonov anti-tank rifle or PTRS of 1941. Sergey Simonov worked throughout the Second World War to perfect his abortive 1941-pattern semi-automatic rifle, eventually transforming it for the 7.62×39 intermediate cartridge. The resulting →SKS was adopted in 1949 to safeguard the possible failure of the →Kalashnikov assault rifle. Decorated with the Hero of Socialist Labour award, among others, Simonov died in 1986 after a particularly long and distinguished career.

Simonov Vladimir Vasilyevich Simonov, nephew of Sergey Gavrilovich, was born in Kovrov in 1935. After completing a mine-engineering course in the Poldolsk Industrial-Technical College in 1955, he began work at the Central Scientific Research Institute for Precision Engineering. In addition to research work in other subjects, V.V. Simonov has been responsible for the →APS (a silenced version of the Stechkin pistol) and the →SSP-1 underwater pistol.

Simonov anti-tank rifle (*Protitankovoye Ruzhe Simonova*, 'PTRS'). Developed in haste immediately after the Germans invaded the Soviet Union in the summer of 1941 and ordered into production 'off the drawing board' together with the simpler bolt-action →Degtyarev competitor (PTRD), this giant auto-

loading rifle chambered a powerful 14.5×114 cartridge. The PTRS relied on a conventional gas system with an adjustable regulator, and had a box magazine loaded with a five-round clip. Though more than 100,000 were made, the gun was too large and too sophisticated to be cost-efficient in machine time; the simpler PTRD, therefore, was made in far larger numbers.

Simonov automatic rifle (AVS). Sergey Simonov began his design work in the Kovrov in 1922, but ten years of comparative testing elapsed before the 1931-type rifle was approved for service trials. These showed that improvements were needed, but finally, on 22nd March 1934, the Simonov rifle was adopted for service. Series production of the AVS (or 'AVS36') began in Izhevsk in 1937, but combat experience showed their weaknesses. Construction was too light to withstand prolonged automatic fire (the guns weighed only 4.5kg empty) and the vertically-moving locking block jammed too easily. Changes were made as production progressed, losing the virtues of interchangeability, but work stopped in favour of the →Tokarev in 1939 after about 66,000 1936-type guns had been made. Simonov had been preparing a better design, but had fallen out of favour. The improved gun became the 7.62×54R Model 1941, and this in turn became the 7.62×39 *Samozariadniya Karabina Simonova* ('SKS') in 1949. The SKS was made in quantity in the Soviet Union, but the →Kalashnikov assault rifle was preferred. However, copies of the Simonov design were made in huge numbers elsewhere—particularly in the People's Republic of China, where output may have exceeded twenty million. Others were made in the German Democratic Republic and Yugoslavia. Additional details will be found in John Walter *Rifles of the World* (Krause Publications, third edition, 2006) and *Soviet Small-Arms and Ammunition* by David N. Bolotin (Finnish Arms Museum Foundation/Handgun Press, 1995).

Simonov underwater pistol, SPP-1. Apparently dating from the late 1960s, this four-barrel design fires 4.5mm darts inserted in modified 7.62×39 cases. These are loaded as four-round clips simply by breaking the action open. The double-action self-cocking striker fires each barrel sequentially, novelty lying more in the ammunition than the gun itself.

Simple Rifles were made in China, for the Japanese occupation forces, at the end of the Second World War. A crude but otherwise conventional emergency weapon, the first single shot 'Simple Rifle' fired the 7.7mm Type 99 round. This proved much too powerful, and was speedily replaced by the 8mm pistol cartridge. Simple Rifles had slab pattern butts and split bridge receivers. Locking relied on the base of the bolt handle, while the trigger system often consisted simply of a spring and lever engaging directly in the cocking piece. The only contractors thus far identified are Toa Ironworks, Shanghai; Nanking arsenal; the Sixth Army repair depot, Tung Shan; and the Chi Fo, Wang Shih and Shu Chow workshops in Tung Shan.

Simplex A name associated with a revolver sold in Belgium prior to the First World War by A. →Rongé.

Simplex This was a self-cocking single-barrel shotgun made in 12- or 16-bore by

→Manufacture Française d'Armes et Cycles. A simple design with an internal or external hammer, the action was opened by an underlever doubling as the trigger guard and locked by a horizontal slide entering a recess in the barrel-block. An automatic ejector was fitted. Some guns will be found with decoration ranging from simple scroll panels to overall engraving. See also 'Supra-Simplex'.

Simplex A mark found on the grips of →Bergmann-Simplex pistols, made in Germany and possibly also Belgium or France in the early twentieth century.

Simplex-Canardier An 80cm-barrelled 10-bore variant of the Simplex (above), intended for duck hunting. A large standing-block back sight could be found on top of the breech.

Simplex-Junior A lightweight variant of the Simplex (above) in 20- or 24-bore.

Simplex A very low powered U.S.-made BB gun, cocked by a thumb hammer and made of two pieces of sheet metal by the →Chicago Rifle Mfg Co., 1898–1900.

Simpson Piccadilly; London. The name of this gunsmith (gentlemen's outfitter?) Has been reported on 12-bore shotgun cartridges of unknown provenance.

Simpson Clarence E. Simpson. This government arms inspector, working shortly before the Second World War began, accepted .45 M1911A1 →Colt-Browning pistols marked 'CES'. A similar mark was used prior to the American Civil War by Charles E. →Sherman. See also "U.S. arms inspectors' marks".

Simpson George Simpson of Hartford, Connecticut, was co-patentee with William →Robertson of a breech-loading carbine tested by the U.S. Army in 1866.

Sims John G. Sims: see 'John G. →Syms'.

Sims Rifle Company; California, U.S.A. This short lived business made the unsuccessful →Simco pump-up pneumatic rifle, introduced in 1948/9 as a potential rival for the →Benjamin and →Crosman types. The Sims company was liquidated in 1953.

Simson & Companie; Waffen- u. Fahrzeugfabrik; Suhl in Thüringen. The Simson brothers, Löb and Moses, opened a shop in Suhl in 1850 to sell clothes and textiles. In 1854, the brothers bought a third-share in a forge with a water-powered steel hammer owned by Andreas Bauer; in 1856, Löb and Moses founded 'Simson & Cie' in 1856, to make steel, and the 'Gebrüder Simson Bajonett- und Ladestock-fabrik' ('bayonet and ramrod factory') followed in 1862.

¶ In addition to sporting rifles and →Reichsrevolvers for the imperial government (the handguns being produced in partnership with V.C. →Schilling and C.G. →Haenel), Simson subsequently made huge numbers of bayonets for, among others, the governments of Germany, Greece, Peru and Turkey.

¶ The trading style became 'Simson & Compagnie' in 1881 and the first bicycles were made in 1896. Gerson Simson, who had been directing affairs since 1875, died in 1904; but his sons succeeded to the management of a company which was employing 1200 people. The 1914 edition of the *Deutsches Reichs-Adressbuch* lists the owners of what had become one of Thuringia's best-known gunmaking businesses as Leonhard, Julius, Max and Witwe Jeanette Simson.

¶ When the First World War began in the summer of 1914, Simson & Co. had 3500 employees; war-work, which included the production of components for

rifles, machine-guns and artillery shells, had swelled this total considerably by the time fighting ceased in November 1918. However, bust followed boom, and Simson had to sack more than two-thirds of the workforce in the early 1920s. The 1925 *Deutsches Reichs-Adressbuch* records the company's products as 'hunting and sporting guns, small-calibre guns, automatic pistols, cars and bicycles', and lists a branch office in Berlin NW7, Unter den Linden 75–76.

¶ The customary trademark consisted of 'S' superimposed on the central of three pyramids, registered on 23rd October 1918, though the cursive 'Simson' will be found on sporting guns and 'Astora' will be encountered on shotguns. 'Columbus', Esuco ('S. u. Co. '), 'Supra' and 'Titus' were also used, but rarely if ever on the guns.

¶ The 1928 DRAB was still listing hunting rifles, carbines and automatic pistols alongside motor cars and bicycles (*Automobile und Fahrräder*). Restrictions on arms production by the Treaty of Versailles had allowed Simson to become the German army's sole supplier of →Mauser action rifles in 1920, and many similar guns were completed in sporting form. Simson also supplied →Parabellum or 'Luger' pistols to the armed forces, though Mauser continued not only to offer them commercially but also fulfil a few export orders. Simson's Model 1922 and Model 1927 6.35mm vest-pocket pistols or *Westentaschenpistolen* were essentially similar, excepting that the latter had an entirely slab-sided slide instead of the semi-tubular form exhibited on the older gun. Yet trading was still weak in 1930, when directories listed Simson & Co.—directed by Leonhard Simson, Arthur Simson, Dr Julius Simson, and Julius Simson senior—as makers of vehicles, bicycles, sporting guns, precision machinery and measuring instruments.

¶ The Simson family was not only Jewish, but sufficiently rich and successful to encourage envy and antagonism. Consequently, once the NSDAP had seized power in 1933, the headquarters were occupied by the Sturm Abteilung; vehicle production was stopped on 1st September 1934, and business was rapidly reorganised as 'Berlin-Suhler Waffen- und Fahrzeugwerke Simson & Co.' (BSW). Finally, in 1939, the name 'Gustloff-Werke, Waffenwerk Suhl' was adopted and war production began in earnest: by 1944, subsidiaries were being managed not only in Meiningen in Germany, but also in Greiz and Łódz in Poland. In 1944 alone, a workforce totalling about seven thousand made 7640 sporting and hunting rifles, 61540 MG. 42 machine-guns and 2479 2cm Flak. 38 anti-aircraft guns.

¶ When the Second World War ended in May 1945, weapons gave way to axes, tools and saucepans. However, on 28th December 1945, Gustloff-Werke was seized by the occupying Russians. Thousands of machine tools were taken back to the USSR, leaving only 883 in Suhl. Production of hunting rifles and bicycles began again in October 1945, reverting to the name 'Simson & Co.'; then, on 1st April 1946, the business was formally reconstituted as a Soviet-owned stock company ('SAG', *Sowjetische Aktiengesellschaft*) trading as 'Simson & Co. Suhl, Fahrradfabrik der sowjetischen Aktiengesellschaft für Spezialmaschinenbau'.

¶ On 5th March 1947, another change of name occurred: 'Suhler Fahrradfabrik der sowjetischen staatlichen Aktiengesellschaft "Awtowelo"...'. Work continued, and 14,979 hunting rifles were made in 1948. On 1st May 1952, ownership of the business was vested in the government of the German Democratic Republic (DDR, 'East Germany') as 'Volkseigener Betrieb Fahrzeug- und Gerätewerk Simson, Suhl'. On 1st January 1968, Simson company merged with Ernst-Thälmann-Werk of Suhl (formerly →Haenel) to form 'VEB Fahrzeug- und Jagdwaffenfabrik Ernst Thälmann', Wilhelm-Pieck-Strasse 16, Suhl. The new organisation made 'Simson' and 'Gebrüder Merkel' sporting rifles and shotguns, advertising usually depicting the Simson and Merkel trademarks alongside the 'TW' monogram of Ernst Thälmann.

¶ The individual components of Thälmann, each retaining its original brand names and trademarks, formed a 1970-vintage *Kombinate* together with MZ Zschopau and Mifa Farhrradwerk of Sangerhausen. The group was then known collectively as 'IFA-Kombinat Zweiradfahrzeuge', although each component kept its name. The reunification of Germany was a disaster for many industries in what had been East Germany, and IFA was no exception; bankruptcy and liquidation loomed in 1990, and the assets were stripped in an attempt to form profitable businesses. Consequently, November 1991 brought the creation of →Suhler Waffenwerke GmbH.

Simson & Luck, Suhl in Thüringen. This seems to have been either an affiliate or a subsidiary of Gebrüder Simson, formed in 1865 by Karl August Luck and the Simson brothers to develop firearms. Luck, who may also have been involved with →Bornmüller, Simson & Luck, was granted several patents in Germany in the 1860s and a →Dreyse-system →Zündnadel-Defensions-Gewehr Ö/M (*Österreichisches Modell*, 'Austrian Model') dated 1868 is said to be marked s. & L. above SUHL. Simson & Luck traded for at least eighteen years. However, trademark registers reveal that the 'Simson' name registered in 1897 was owned by 'Simson & Co., vormalis [formerly] Simson & Luck, Suhl'. The relationship between these two businesses, therefore, is still something of a mystery.

Simulated death guns: see 'Scheintod'.

Singer A small Browning type automatic pistol marked by Francisco →Arizmendi of Eibar in two patterns: 6.35mm, six rounds, striker fired; or 7.65mm, seven rounds, striker fired. The guns may have been made by →Arizmendi y Goenaga.

Singer Manufacturing Company; Elizabethville, New Jersey. Best known for its sewing machines, Singer obtained a contract to make .45 M1911A1 →Colt-Browning pistols when the U.S.A. entered the Second World War in December 1941. However, only about five hundred guns had been made in 1942 before production was suspended in favour of artillery range-finders. Their slides were marked s. MFG. CO. above the address. A British subsidiary, The Singer Manufacturing Co. Ltd, made more than 300,000 →Sten Mk I and Mk I* submachine-guns in its Clydebank (Scotland) factory during the Second World War. Large quantities of components for the →Lee-Enfield No. 4 rifle also date from this period. Many of them bore 'N 67' instead of the company name,

though there were other factories in Coventry which used 'M'-prefix identifiers. See also "British military manufacturers' marks".

Single action Applied generically to any trigger system embodying a hammer (or striker) that must be cocked manually before it can be released by the trigger. See also 'Double Action'.

Single Action An alternative name for the Model 422 carbon dioxide powered pistol, made by the →Benjamin Rifle Co. of St. Louis, U.S.A.

Single Action Army Model Revolver, 'SAA', 'Peacemaker', 'Model P' or 'M1873'.

This single action gun was introduced in 1873 by →Colt's Patent Fire Arms Mfg Co., of Hartford, Connecticut, U.S.A., to succeed the open frame →New Model Army pattern. The Peacemaker appears to have been the work of William →Mason, who combined the traditional Colt layout with a solid top frame, but also acknowledged a series of patents granted to Mason and Charles →Richards in 1872-5. The U.S. Army purchased more than 37,000 .45 calibre Single Action Army Colts in 1873-91, mostly with 7½-inch barrels though many survivors had their barrels shortened in the 1890s for issue to artillerymen (the so-called 'Artillery Model', q.v.). The Colt was also popular commercially; about 357,000 guns were made in 1873-1940, plus an additional 850 assembled immediately after the end of the Second World War. They had been offered in chamberings ranging from .22 Short rimfire to .476 Eley centrefire (though .45 Long Colt and .44-40 WCF accounted for sixty per cent of sales), and also often on the basis of a 'Smokeless Powder' frame. Barrels varied between 42in and 16in; grips were wood, gutta percha, ivory or mother of pearl. Virtually the only major change concerned the cylinder pin, which from 1893 onward became a transverse bolt locked by a spring. This improvement had been patented by William Mason in September 1874. Production began again in 1956, when the first of about 80,000 Second Model guns were made prior to the advent in 1976 of the "Third" or 'New' model. They were chambered for the .357 Magnum, .38 Special, .44 Special or .45 Colt cartridges. The Third Model (1976-85), sharing numbers containing 'SA' with its predecessor, contained internal refinements; some guns were made on the smokeless-powder frame, and others on the original 'Black Powder' pattern. Fourth Model guns (1985 to date) have been offered on the black-powder frame only, in .44-40 WCF or .45 Colt.

Sionics, Inc.; Atlanta and Powder Springs, Georgia, U.S.A. Best known for sound-suppressors ('silencers'), this business was also responsible for promoting the →Ingram submachine-gun in 1966-70. Operations were then purchased by the →American Military Aarmament Corporation ("AMAC").

Sirocco A 'gas-ram' air rifle patented in 1981 by H.F →Taylor and D.R. →Theobald. The guns were originally made by →Theoben Engineering of St. Ives, Cambridgeshire, but have since been licensed to many leading manufacturers (e.g., Hermann →Weihrauch).

Sitting Bull A →Suicide Special revolver made in the U.S.A. by the →Ryan Pistol Company of Norwich, Connecticut, in the late nineteenth century.

Sivispacem A small Spanish automatic pistol of Browning type, made in Eibar

by Sociedad Española de Armas y Municiones (*SEAM); 7.65mm, six rounds, hammer fired. Possibly also made in 6.35mm.

Sivispacem Parabellum A Browning type pocket pistol made in Spain by, or perhaps for →Thieme y Edeler of Eibar; 6.35mm, six or seven rounds.

Six Gun A colloquial name for virtually any revolver, though technically restricted to those with six-chamber cylinders.

Six Gun The Daisy-made Model 179 spring-powered revolver.

Sixteen Cartridge ['The...']. A mark found on 16-bore shotgun cartridges sold by Charles S. →Rosson of Norwich, Norfolk. See also 'Twenty Cartridge'.

SJ&D, sometimes in the form of a monogram, and often within an oval cartouche. Found on revolvers made in Belgium prior to 1914 by →Simonis, Janssen & Dumoulin of Liège.

SK *beneath a crown, above a number*. A mark applied by inspectors working in the →Royal Small Arms Factory in the Sparkbrook district of Birmingham. See also 'B' and "British military inspectors' marks".

SK Found on U.S. military firearms and accessories. See 'Samuel →Keller', 'S. →Knows'.

S&K or **S. & K.** Trademarks associated with →Sempert & Krieghoff of Suhl, but readily confused with 'S&H' (q.v.).

SKB Arms Company This gunmaking business was founded by the Sakaba family in 1855, and was originally sited in what is now Mito City; matchlocks were made for the Tokugawa shogunate, until the advent of the Meiji era in 1868 and the development of foreign trade led to production of cartridge firearms. Hunting and sporting rifles have been made continuously since the late 1870s. The plant facilities, now located in Cho-ku, Tokyo, were modernised after the end of the Second World War and gun production recommenced in 1947. SKB has made a small range of airguns, including the M53 and M3 of the 1950s, and also owns the Sharp Rifle Co. The SKB trademark derives from the Sakaba name, which in Japanese consists of three ideographs (*sa ka ba*). (NB: Walter Smith, in *Gas, Air & Spring Guns of the World*, confused the products of SKB with those of →Kawaguchiya.)

Skeet, →Concorde Skeet or →Daytona Skeet. 12 bore over/under shotguns made by →Società Armi Bresciane of Gardone Val Trompia, with an anatomical pistol grip, a special fore end and a single selective trigger. Barrels are customarily 68 or 71cm long. The Skeet SL is similar, but has side locks instead of a box lock action.

SAB: see 'Società Armi Bresciane'.

Skerrett Henry Skerrett was a patent agent, with chambers at 24 Temple Road, Birmingham, who assisted several well-known inventors. Among protection sought with Skerrett's aid were British Patents 14,588/05 and 22,681/05 of 1905 and 8246/06 of 1906, granted to the →Birmingham Small Arms Co. Ltd, Augustus →Driver and George →Norman; British Patents 11,817/05 of 1905 and 25,830/06 of 1906 to Driver and Norman alone; and 15,712/02 of 1902 and 9153/04 of 1904 to Frederick S. →Cox. Lincoln →Jeffries (Senior) was assisted

in applications for what became British Patents 20,246/03 of 1903; 10,426/05 and 22,550/05 of 1905; 11,588/06 of 1906; 10,250/10 25,783/10 and 30,338/10 of 1910; 1405/11 and 9684/11 of 1911. The younger Lincoln Jeffries was helped in relation to British Patent 181,277 (1921). Other Skerrett clients included George F. →Urry, who obtained British Patent 20,744/06 of 1906 in collaboration with Lincoln Jeffries (Senior), and W.J. 'Bill' →Whiting in connection with British Patent 4213/10 of 1910. Skerrett appears to have died or retired shortly after the end of the First World War, to be succeeded by his sons Henry N. and William S. Skerrett.

Skimmin & Wood, sometimes listed as 'Skimin & Wood'; Birmingham. This agency modified about 41,330 .303 No. 3 →Enfield rifles to 'Weedon Repair Standards' ('WRS') in the summer of 1939. The code 'M 224' may have appeared on guns instead of the partnership's name. See also "British military manufacturers' marks".

Skinner & Company; Haywood Street, Leek, Staffordshire. This English gun-, fishing-tackle and sporting-goods retailer is known to have marked shotgun cartridges supplied prior to 1914 by →Kynoch Ltd of Birmingham.

SKN. A mark found on many British firearms which have been 'Skeletonised' (i.e., cut away) for educational use. Some of the examples dating from the early stages of the Second World War will prove to be the work of H. →Atkin.

Škoda Emil Škoda, born in 1839, was deported from Germany back to his native Austria at the time of the Seven Weeks War (1866). Škoda then became works superintendent of a arms-making workshop founded in 1859 in Valdstejn by Graf Arnost. Purchasing the facilities only three years later, in 1869, Škoda began to put the knowledge of steel-making he had gained in the Weser shipyard in Bremen to good use. A steelworks was opened in 1884 and, by 1890, the company was advertising a range of guns, gun carriages, ammunition, cast-steel armour plate and the 'Patent Mitrailleuse'. Škoda died in 1900.

Škoda machine-gun Promoted by the renowned arms-making company of the same name, this was the work of two soldiers with influence at the highest level: Archduke →Karl Salvator and Georg, Ritter von →Dormus. Designed in 1885, only a year after Maxim had been granted his first patent, the Salvator-Dormus gun was seen as a cornerstone of the business formed by Emil →Škoda.

¶ Experiments had been made with the Salvator-Dormus prototypes as early as 1886, after an agreement had been reached with the inventors. By 1889, the basic design had been finalised with the assistance of technicians led by Andreas Radovanovic and a patent was sought in Škoda's name. In October 1893, the Škoda was accepted for service instead of the →Maxim. The manufacturer endeavoured to obtain export orders, exhibiting guns in 6.5mm, 7mm and 8mm at the Paris Exposition in 1900, but only 210 had been made by 1901. It is assumed that most of these were being used by Austria-Hungary, but the actual total is not known.

¶ An improved design appeared in 1901. Though the gravity-feed magazine and the pendulous rate-reducer were greatly refined, the changes could not disguise

that the weapon was obsolete. The Model 1903 was a long-barrelled derivative of the M. 1901, mounted on a light tripod intended for cavalrymen, but only six were made.

¶ By 1907, the pendulum-type rate reducer had been abandoned and a belt-feed system had replaced the unsatisfactory gravity-feed box. Škoda advertised the M. 09 in 6.5mm, 7mm, 7.65mm, 7.9mm and 8mm (8×50R), and trials were undertaken for Bulgaria, China, the Netherlands, Peru, Romania and Turkey prior to 1914. Only the Chinese are purchased the guns in any numbers.

¶ The M. 09 was superseded by the M. 13 and M. 14, which were identical apart from the date of manufacture. These guns had longer barrels, improved belt-feed systems, and more efficient lubricators. They were mounted on the compact M. 13 tripod, with steel links connecting the legs to prevent collapse in the firing position.

SKS An abbreviated form of Samozariadniya Karabina Simonova, this was applied to a 7.62×39 auto-loading carbine designed by Sergey →Simonov during the Second World War and ordered into series production in 1949.

Sk. Y. Found on Finnish military firearms, ranging from →Maxim machine-guns and →Mosin-Nagant rifles to →Suomi submachine-guns and →Lahti pistols. Applied by the headquarters units of the Protective Corps, *Suojeluskuntain Ylieskunnien* (sic). The remainder of the units used an 'S-and fir-leaf' mark.

Sky High ['The...']. This mark will be found on British shotgun cartridges, associated with William →Evans of London and also with →Jeffrey & Son of Plymouth.

Skyrack ['The...']. Found on shotgun cartridges made by →Greenwood & Batley.

SL or S.L. Found on 'Single Loading' guns—usually special .303 →Lee Enfields—destined for Indian troops whose loyalty or proficiency was uncertain.

SL Found on components for the No. 4 →Lee Enfield rifle made during the Second World War by William Sykes Ltd. This company was also allocated the area code 'N74', but often used its initials instead.

SL Found on U.S. military firearms and accessories. See 'Samuel →Leonard'.

Sladden, Brothers & Company, describing itself as an agency but also a member of the English gun trade, appeared in the London directories for 1873 at Albert Buildings, Queen Victoria Street; 4 King Street, Cheapside; and 29 Ironmonger Lane.

Slant breech [Sharps], also known as the 'Model of 1851'. This was characterised by oblique movement of the breech, a combined operating lever and trigger guard, and a tape primer ahead of the hammer. The hammer was carried inside the back action lock plate and the receiver has distinctly rounded contours. Sporting guns usually chambered .36, .44 or .52 linen case combustible ball cartridges, though .52 shot loads were made in small quantities and .56 calibre carbines were made for trials in Britain. The Model 1853 was generally made as a .52 calibre carbine, with brass furniture. The lock plate contained Sharps' patented pellet magazine, with a slender brass tube of waterproofed priming discs. The Model 1853 was supplemented by the Model 1855, four hundred carbines with →Maynard Tape Primers being ordered by the U.S. Army in April

- 1855 and two .52-calibre hundred rifles by the navy in March-September 1856.
- Slave:** see 'Buffalo-Slave'.
- Slavia** A 6.35mm Browning-type pocket pistol made in the 1920s in Kdyne, Czechoslovakia, by A. Vilimec.
- Slavia** Associated with a range of break barrel spring air rifles, from the simplest junior type upward, made in Czechoslovakia—possibly by Kovo AS. The guns have been distributed in Britain by →Edgar Brothers.
- SLAZ.** A mark associated with the products of Slazengers (Australia), Pty Ltd of Sydney, New South Wales. A branch of the British sporting goods manufacturer, Slazengers Pty. marketed as many as 350,000 .22 rimfire rifles made between the world wars by the government small arms factory in →Lithgow. Stocks, handguards and wooden furniture for the SMLE and other guns were made in huge quantities during the Second World War, the products being marked 'SLAZ.'
- Sleeve pistol:** see 'Elek →Juhasz'.
- SLEM** This automatic rifle, 'Self Loading, Enfield Model', was an experimental forerunner of the →SAFN, made in the →Enfield small arms factory during the Second World War. It was designed by Diedonné →Saive with the assistance of British technicians.
- Slide action** An operating system relying on the reciprocal motion of a forward hand grip to unlock the breech, extract, eject, cock the firing mechanism, then reload and re-lock. The first slide-action design was the 'Haveness' patented in 1878-9 by Andrew →Burgess, but was not exploited for some years—and a lawsuit brought by →Winchester against →Bannerman in the 1890s cited designs going back to the 1840s. The first slide-action design to be successful commercially, however, was patented by Christopher →Spencer and Sylvester →Roper in 1882-5. The basic system became popular by 1900, and many similar guns have been made ever since. Most are shotguns, but a substantial number of shotgun-like rifles have also been made.
- Slidemaster** A brand name customarily applied to the 4.5mm/BB Model 3500 slide action pneumatic rifle made by →Crosman.
- Slingsby Guns;** Boston and Sleaford, Lincolnshire. The name of this provincial English gunmaker has been reported on a variety of shotgun cartridges made by →Eley-Kynoch. Among the tradenames are "Slingsby's Champion", "Slingsby's Fen", "Slingsby's Special" and "Slingsby's Stump", the last being named after a prominent church-tower in Boston known locally as the 'Boston Stump'.
- Slocum** Frank Slocum invented the sliding sleeve loading system patented on 27th January and 14 April 1863 (U.S. nos. 37,551 and 38,204). Rights to these were assigned to the →Brooklyn Firearms Company.
- Slotter & Company;** Philadelphia, Pennsylvania, and San Francisco, California. A gunmaking and distributing business, best known for →cap-lock sporting/target rifles and the .41-calibre →Deringer-type pistols popular at the time of the California Gold Rush (1849).
- SLR** A generic term, 'self-loading rifle' (q.v.), often used in the designation of light

automatic weapons.

SLT Found on U.S. military firearms and accessories. See 'S.L. →Tuttle'.

Slugs Limited A maker of airgun ammunition operating in Bromley, Kent, from 1933 until acquired by →Lane Brothers in 1953 or 1954; →Eagle slugs were thereafter made by Lanes until 1955/6, though this may have been simply a way of disposing of existing stock.

SLW Found on U.S. military firearms and accessories. See 'Samuel L. →Worsley'.

SM, S.M. or S.M.C. Marks found on components for the No. 4 →Lee Enfield rifle made in Britain during the Second World War by the Singer Manufacturing Co. Ltd of Clydebank, Scotland. This company was also allocated the area code 'N67', but often used its initials instead.

SM, or 'Sport-Modell'; used generically to describe a variety of sporting guns marketed in Germany.

SM An abbreviated form of 'Sport & Munition'. A trademark associated with →Rhöner.

SM *on a horizontal band within a circle.* A trademark used by Karl Arndt →Reck of Lauf bei Nürnberg.

SM Found on U.S. military firearms and their accessories. See 'Samuel →Marcy', 'Stillman →Moore'.

Smail The name of John Smail & Sons, an ironmongery business trading in the 1950s in Morpeth, Northumberland, England, has been found on 12-bore shotgun cartridges made by →Eley-Kynoch and distributed under the brand name 'The →Lightning Killer'.

Small Arms Group: Britain. See 'Saive'.

Small Arms Ltd; Long Branch, Toronto, Ontario, Canada. Makers of No.4 →Lee Enfield rifles for Britain, Canada and China, 1942B5. Also made more than 128,000 Mk II →Sten submachine-guns for the Canadian armed forces during the Second World War.

Smallwood The marks of this gunsmithing business, trading in Shrewsbury, Shropshire, England, have been found on 12-bore shotgun cartridges sold as "Smallwood's Challenge"; the headstamps show that they were acquired from James R. →Watson & Company of London, but had apparently made in Belgium.

Smallwood Horace Will[iam?] Smallwood, an employee of →Webley & Scott, was granted two patents in 1941 (as co-beneficiary with the company) for a simplified trigger mechanism with an inbuilt safety catch; the latter was not a new idea, but protection on a previous pattern had ceased.

Smasher ["The..."]. A brand name found on shotgun ammunition handled by Henry →Elliott of Dartford, Kent, England.

Smeaton ["The..."]. Associated with the British shotgun cartridges handled by C.G. →Edwards & Son of Plymouth, Devon. Named after a famous engineer.

S. MFG. CO.: a mark found on the slides of .45 M1911A1 →Government Model pistols made for the U.S. armed forces during the Second World War by the →Singer Manufacturing Company.

- S.M.F.M.;** Saint Étienne, France. Makers of electric ignition shotguns in the post 1945 era, relying on dry batteries in the butt heel to excite special igniters in the cartridges when pressure on the trigger completed the circuit.
- SMI or S.M.I.:** abbreviations found in the headstamps of cartridges made by →Società Metallurgica Italiana of Brescia, Italy. Now known as 'La Metalli Industriale SpA', but still using the original headstamps.
- Smith** A.F. Smith; Hailsham, Sussex. The marks of this gunsmith and ironmonger have been found on shotgun cartridges sold in southern England as 'The →Hailsham Special'.
- Smith** Alfred Smith, trading from about 1866 until 1900 or later from 27 & 28 Whittall Street, Birmingham, Warwickshire, England, is believed to have succeeded →Smith & Townsend; the trading style became '& Son' in 1883 or 1884.
- Smith** Asa Smith was co-patentee with Orville B. →Percival of a unique three-magazine repeating pistol, made briefly in Norwich, Connecticut, by Horace →Smith.
- Smith** C.H. Smith & Sons; Birmingham, Warwickshire. The marks of this gunmaking business, probably a successor to Charles Smith (below), have been found on shotgun cartridges sold under the tradenames 'The →Abbey' and 'The →Invincible'. Most of them date from the 1920s.
- Smith** Charles Smith; Birmingham, Warwickshire. The marks of this English gun-rifler and pistol-maker, trading from 86 and then 25 Weaman Street from 1861 onward have been reported on shotgun ammunition, but it seems more likely that these were the work of C.H. Smith & Sons (above). See also 'Samuel & Charles Smith'.
- Smith** Charles Smith & Sons of Market Place, Newark, Nottinghamshire, marked sporting guns and a variety of shotgun cartridges, most of which were apparently loaded in Newark into cases supplied from Europe. Among identifiable trade names were 'All-British Extra Special', 'The Castle', 'The →Clinton', 'The Newark Cartridge', 'The →Rufford' and 'The Universal'.
- Smith** Charles James Smith first appears in 1839 as a partner with his brother Michael in 'M. & C.J. Smith', at 79 Steelhouse Lane, Birmingham, Warwickshire, England. He subsequently traded on his own account from 27 & 28 Whittall Street, Birmingham, making 'Magazine Self Priming Guns, Rifles and Pistols of Every Description' protected by English Patent 10,667 of 14th May 1845. He was also a member of the Gunmakers Company, being listed at 61 King William Street, London E.C., in 1846-7 and at 24 King William Street in 1850. Smith may have been succeeded by his son in 1852 (see 'Charles Smith', above).
- Smith** Dexter Smith; Springfield, Massachusetts, U.S.A. Son of Horace →Smith, born in 1833, this gunmaker made single shot 12 or 16 bore radial breech block shotguns in accordance U.S. Patent 111,814 of 14th February 1871 (sought jointly with Martin →Chamberlain). Patents 129,433 of 16th July 1872, 138,207 of 22nd April 1873 and 141,603 of 5th August 1873 (jointly with Joseph C. →Marshall) were all granted for variations on the basic theme. Production was

confined to 1872B5. Smith also received U.S. Patents 60,074 of 27th November 1866 for a cartridge loading machine; 230,582 of 27th July 1880 to protect a 'firearm'; and 176,412 of 18th April 1876 (with C.C. & Joseph C. Marshall) for 'an extractor for revolving firearms'. After the commercial failure of his shotguns, Dexter Smith turned his attention to revolvers. His many relevant U.S. Patents, in chronological order) were: 160,551 of 9th March 1875; 162,863 of 4th May 1875 (with Joseph C. Marshall); 163,032 of 11th May 1875; 171,059 of 14th December 1875; 176,448 of 25th April 1876 (with Marshall); 193,836 of 7th August 1877, assigned to D.B. →Wesson; 196,491 of 23rd October 1877; 221,000 of 28th October 1879; 247,217 and 247,218 of 30th September 1881; 248,223 of 11th October 1881; 250,591 of 6th December 1881; 315,352 of 7th April 1885; and 318,315 of 19th May 1885. In view of this commitment to revolver design, it is likely that Otis A. →Smith was Dexter Smith's son.

Smith Edwin Smith. An English gunmaker, trading in 1870 from 34 Castle Street East, West London.

Smith Frederick Smith was co-patentee with Daniel M. →Lefever of a compensating joint to reduce the effects of wear in shotgun actions—U.S. Patent 264,173 of 12th September 1882.

Smith George Smith. This peripatetic gunmaker—perhaps the thirty year old 'George Smith' listed in the 1841 census in Upper King Street, London—was listed from 1859 until 1866 at 40 Davies Street, West London; he was at 16 Davies Street in 1867, at 104 New Bond Street in 1868–9, and at 82 New Bond Street in 1870. A move back to Davies Street (to no. 10) took place in 1871, and then to 253 Oxford Street in 1872. The 1874 directories place him at 3 Park Lane, and those of 1885 at 110 Mount Street. Smith then transferred 3 Angel Court, King Street, West London, in 1888, but was at 4 Stafford Street by 1891. The trading style became 'George Smith & Co.' in 1897, with premises at 153 Piccadilly, and business continued at least until the First World War.

Smith George Smith & Company (active 1862–4 and probably into the 1870s); New York City. Smith made cap lock pistols and spring air gallery rifles, some of which had double set triggers.

Smith Gilbert Smith; Buttermilk Falls, New York State, U.S.A. Smith was responsible for a break-action carbine, patented in 1856, which originally fired cartridges with a gutta percha case. The breech was locked by a sturdy spring steel bar projecting back from the top of the barrel over a stud on the standing breech. A small locking catch ahead of the trigger lever was pressed upward to release the bar, allowing the barrel to open. Three hundred .50 calibre Smiths were purchased for field trials shortly before the Civil War began. They were made by →Poultney & Trimble, assignees of the original patents, but manufacture was sub contracted work to the Massachusetts Arms Company. In August 1863, however, the Massachusetts Arms Company passed part of work on the Smith carbine to the →American Machine Works to free facilities for the →Maynard gun. Poultney & Trimble had soon shifted the entire contract to American Machine Works. A new promoter, the →American Arms Company,

was formed to oversee work. Though Smith carbines had originally fired rubber case ammunition, "Poultney's Patent Metallic Cartridge" transformed the carbine into a better design. Federal purchases between 1st January 1861 and 30th June 1866 totalled 30,062 carbines.

Smith Harris Smith, working for the Federal and U.S. governments, accepted firearms and equipment from the Civil War period on into the late 1870s. Marked 'HS', the items can sometimes be difficult to distinguish from those accepted by H. →Saunders, Horace →Scott, Harrison →Shaler, Howard →Stockton and H. →Syrett. See also "U.S. arms inspectors' marks".

Smith Horace Smith. Born in Cheshire, Massachusetts, on 28th October 1808, Smith was apprenticed in the National Armory, →Springfield, where he remained until 1842. A move to New Haven, Connecticut, then allowed him to make tools for Eli →Whitney, and it is believed that he then went to work for →Allen & Thurber in 1845–8. Working on his own account in Norwich until 1852, making magazine pistols to the patent of →Percival & Smith and then whaling guns and explosive harpoons, Horace Smith began working for →Allen, Brown & Luther of Worcester, Massachusetts. During the early 1850s, Smith had been employed by the financier Courtlandt →Palmer, helping to perfect the →Jennings Rifle and the →Volitional Ball. He had been granted U.S. Patent 8317 of 26th August 1851 to protect an improved breech-loading rifle, but Palmer withdrew his support shortly afterward and development of the Jennings/Smith rifle ceased. The project was resurrected in partnership with Daniel B. →Wesson, beginning in 1853.

¶ Smith and Wesson jointly received several U.S. Patents: 10,535 of 14th February 1854, to protect a lever-action magazine pistol that cocked automatically as the breech opened; 11,496 of 8th August 1854 for a cartridge loaded with fulminate propellant; 14,147 of 22nd January 1856 protecting 'primers for cartridge of firearms'; and 27,933 of 17th April 1860 describing a method of priming cartridges by spinning fulminate centrifugally into the rims. There were also two patents for 'revolving firearms', 30,990 of 18th December 1860 and 51,092 of 21st November 1865. Smith and Wesson's plans also failed to prosper and rights were sold in 1855 to the →Volcanic Arms Company. Smith retired to run a livery stable, but Wesson doggedly continued development of a metal-case rimfire cartridge. In 1857, armed with both a perfected cartridge and an effectual revolver (made in accordance with a patent granted to Rollin →White), Smith & Wesson once again entered business together. Horace Smith retired from Smith & Wesson on 1st July 1873, selling his stake in the company to Daniel Wesson, and lived out a long and prosperous life that ended in Springfield on 15th January 1893.

Smith John Smith invented a revolver with a one piece frame and barrel shroud, and a rifled steel liner. This was protected by U.S. Patent 376,922 of 24th January 1889 and 413,975 of 28th October 1889.

Smith John Smith & Son: Britain. See 'Henry →Adkins'.

Smith L.C. Smith & Company of New York City acquired the assets of W.H. →Baker

& Sons Company in 1880. Lyman Cornelius →Smith continued to make →Baker pattern side by side hammer doubles for some years. In 1883, however, Smith stopped making Baker-patent side locks in favour of the improved pattern patented by Alexander →Brown. The first hammerless shotgun appeared in 1886, but Smith sold the business to John Hunter in 1888 and operations were transferred to Fulton, New York, in 1890. By 1906, Smith guns could be obtained with the 'Hunter One Trigger', made to the designs of Allan →Lard. The perfected Lard mechanism was guaranteed never to 'double' or jam.

Smith L.C. Smith & Corona Typewriters, Inc.; see 'Springfield'.

Smith Leroy H. Smith. Patentee and inventor, and co-founder with →Baker of the →Ithaca Gun Co.

Smith Lyman Cornelius Smith: U.S.A. See 'L.C. →Smith & Co.'

Smith Morris F. Smith; Philadelphia, Pennsylvania, U.S.A. This gun-designer was granted U.S. Patents 548,096 of 15th October 1895, 784,966 of 14th March 1905, 812,242 of 6th March 1906, 817,134 of 3rd April 1906, and 817,197 and 817,198 of 10th April 1906 to protect a variety of gas-operated machine-guns and automatic rifles. Excepting the earliest, all of these were part- or wholly assigned to financier W.D. Condit of Des Moines, Iowa. Several of Smith's patents were embodied in the auto-loading rifles made in the U.S.A. by →Standard Arms Company.

Smith Orlando Smith; 14 London Street, Derby. The marks of this English provincial gunsmith—active from 1856 to 1863 or later—have been reported on sporting guns and self cocking →pepperboxes. Smith may have moved to Uttoxeter, where a similarly named gunmaker was listed in 1867.

Smith Otis A. Smith; Middlefield and Rock Fall, Connecticut, U.S.A. Smith made solid frame sheath-trigger revolvers incorporating a quick-release cylinder catch protected by his U.S. Patent 137,968 of 15th April 1873. These guns were superseded by a break-open auto-ejecting sheath trigger 'Model 83 Shell Ejector' patented on 20th December 1881 in collusion with his brother John Smith on 20th December 1881 (U.S. no. 251,306). Next came a solid frame hammerless five chamber .38 rim or centre fire 'M1892' gate loader. This gun had a double action trigger system and an exposed cylinder stop which, when pressed, allowed the cylinder to rotate freely. Smith revolvers were handled by →Maltby, Curtiss & Co., and may be encountered under several misleading manufacturer's names—e.g., 'Columbia Armory', 'Spencer Revolver Company' or 'Parker Revolver Company'.

Smith Patrick Smith; Main Street, Buffalo, New York State. A gunmaker active in the U.S.A. in 1848–82, making →cap-lock sporting guns before progressing to metallic-cartridge breechloaders and eventually to dealership. Smith was the assignee of two U.S. Patents granted to Jarvis Davis: 103,154 of 27th May 1870 to protect an extractor for a drop-barrel gun, and 112,127 of 28th February 1871 for a revolver-rifle with an spring-and-chain drive auxiliary magazine tube in the butt.

Smith R. Smith; Carlisle, Cumberland. The marks of this English gunmaker have

- been reported on self cocking →pepperboxes dating from the middle of the nineteenth century.
- Smith** Samuel Smith the Younger. A partner with his brother Charles in 'Samuel & Charles Smith', below, and designer of a breech loader protected by British Patent 1075/67 of 1867. He emigrated to Australia c. 1876.
- Smith** Samuel & Charles Smith. A gunmaking partnership to be found at 64 Princes Street, Soho, London, in 1834–69; and then at 18 Oxendon Street, Haymarket, in 1870–5. Samuel Smith died in 1855, business being perpetuated by his sons Samuel and Charles. Business ceased when the younger Samuel emigrated.
- Smith** Steve[n] Smith; High Friar Street, Ashton under Lyme, Staffordshire. The marks of this gun- and sporting-goods retailer have been reported on shotgun ammunition sold under the name 'Trap and Game'.
- Smith** Thomas Smith was a London gunmaker, recorded at 10 Ray Street, Clerkenwell, and 15 Great Portland Street in 1829, when he was in partnership with Robert Alden. Trading on his own account began from 55 Parliament Street in 1835, then 3 Bridge Street, Westminster (from 1842), 288 High Holborn (from 1845) and finally 13 Little Compton Street, Soho, from 1849/50 until 1860. Smith may then have died, as the entries changed to 'Mrs E. Smith' until 1862.
- Smith** T.J. Smith, a colonel in the U.S. Army, accepted .45 M1911A1 pistols made by →Colt's Patent Fire Arms Mfg Co. Dating from the mid 1930s, they were marked 'TJS'. See also 'T.J. →Stevenson' and "U.S. arms inspectors' marks".
- Smith** W.G. Smith; Philadelphia, Pennsylvania. The assignee of an air-gun patent granted in the U.S.A. in 1893 to Elmer E. →Bailey.
- Smith Arms Company**; New York City. This gunmaking business made the revolver patented by in 1865 by Silas →Crispin. Distinguished by a two-part cylinder and cartridges with annular priming bands, the .32 Crispin was never successful.
- Smith & Townsend** was a partnership of Alfred →Smith and James →Townsend, apparently dating from 1852 or 1853 and operating at various combinations of 27, 28, 28a and 29 Whittall Street, Birmingham, Warwickshire, England, in 1853–62. The partnership was succeeded in 1865 by Alfred →Smith & Son.
- Smith, Hall & Buckland**; Mill Street, Springfield, Massachusetts. A successor to Smith, Hall & Farmer (q.v.), formed in June 1866 when the factory superintendent of Smith & Wesson, Cyrus Buckland, replaced the original partner Charles Farmer. Operations were continued until 1869, when, after the expiry of Smith & Wesson's cartridge-making patent, the business was sold to Joseph Hall and a new partner named Hubbard. See also 'Hall & Hubbard'.
- Smith, Hall & Farmer**; Mill Street, Springfield, Massachusetts. This business was formed in 1863 to acquire the ammunition-making operations of →Smith & Wesson. The partners were Dexter →Smith, son of the senior partner in Smith & Wesson; Charles K. Farmer, a local businessman related to the Wessons by marriage; and Joseph Hall, Smith & Wesson's bookkeeper. It lasted in its original form until June 1866, when Hall was replaced by Buckland. See 'Smith, Hall & Buckland'.
- Smith, Midgley & Company**; Bradford, Yorkshire. The marks of this gunsmithing

and ironmongery business have been reported on 12-bore →Pegamoid shotgun cartridges made by →Eley immediately after the end of the First World War.

Smith & Wesson; Springfield, Massachusetts. The second partnership of Horace →Smith and Daniel B. →Wesson was formed in 1857, working from a small workshop in Market Street, Springfield. By 1858, demand for their products had grown to a point where expansion was necessary and a large new factory fronting onto Stockbridge Street opened in March 1860. Best known for their firearms, the partners also made the first successfully mass-produced →rimfire cartridges, beginning in 1859. Revolvers made before that date had been sold with CB Caps. By 1862, however, more than 6.4 million rimfire cartridges were being made annually. Horace Smith and Daniel Wesson then decided to split the ammunition-making business away from the firearms, resulting in →Smith, Hall & Farmer. Manufacture of the cartridges was also licensed to C.D. →Leet and →Crittenden & Tibballs, in 1864, and then to the →Union Metallic Cartridge Company in 1866. Operations were very successful, despite ill-advised forays into the sporting-gun market (Wesson Firearms Company, q.v.); on 1st July 1873, however, Horace Smith sold his interests to his partner and retired to a life of leisure.

¶ Gradually, Daniel Wesson involved his sons in the business; Walter H. Wesson (1850–1921) became a partner in 1882, followed by Joseph H. Wesson (1859–1920) in 1887. Daniel Wesson lived until 1906, but his death removed the guiding hand from the company; neither of his sons was forceful enough to succeed him, though each held the presidency prior to the First World War. Joseph and Walter Wesson died within the space of eighteen months, leaving the company's affairs in the hands of Harold Wesson (1878–1946), the son of a third brother who had died young in 1888.

¶ After negotiating the Depression with great difficulty, Smith & Wesson returned to prosperity during the Second World War thanks to the guidance of Carl Hellstrom (1895–1963), a consulting engineer hired in 1940 to solve the →Light Rifle crisis. Changes made by Hellstrom's successor, William Gunn, raised Smith & Wesson to profitability in the 1960s and ultimately attracted a predatory bid from Bangor Punta, Inc., in 1973.

¶ Semi-automatic pistols have been acquired by the U.S. Navy and the Special Forces, but have never released the hold first Colt and then Beretta have had on the U.S. Army—even though sales of handguns since Smith & Wesson's beginnings prior to the American Civil War were approaching twenty million by 1990. The conduct of the JSSAP trials that had standardised the Beretta M9 persuaded S&W to file suit in the State of Massachusetts accusing the U.S. Army of 'illegal, improper and suspect actions' but, though Congressional investigation revealed serious flaws in the trial process, the result was not rescinded.

¶ Smith & Wesson's profitability waned until it became clear that the parent Lear-Siegler Group (which had enveloped Bangor Punta in 1983) was keen to sell. In May 1987, therefore, the gunmaking business was acquired by British-

based F.H. Tompkins Holdings. In addition to handguns, Smith & Wesson made about six thousand Model 76 9mm blowback submachine-guns in 1968–74, tested extensively by many agencies but adopted by none of them. The project was abandoned to allow production facilities to concentrate on the semi-automatic pistols. The company also distributed →Husqvarna made bolt action sporting rifles in 1969–72. They were designated ‘A’ to ‘E’, but did not sell in large numbers. A series of shotguns made by →Howa fared better, but was discontinued in 1984.

Smith & Wesson airguns The company’s contribution to airgun development scarcely approaches the value of the better known revolvers. However, a small range of gas powered and spring air guns was marketed from the early 1960s, including the 77A and 80G rifles, and 78G and 79G pistols. ‘G’ suffix guns were powered by carbon dioxide cylinders.

Smith & Wesson handguns The company is best known for exploiting the patent granted to Rollin →White for a revolver with the chambers bored through the cylinder. The seven shot .22 rimfire Model No. 1 appeared in January 1858; though production was slow, the Civil War gave Smith & Wesson a huge boost. Smith & Wesson and Rollin White successfully fought many suits for patent infringement, though →Moore, →Warner, →Pond and →Bacon all completed guns ‘in the course of manufacture’ provided that royalties were paid and the controlling patent was acknowledged.

¶ When the licence agreed with Rollin White ended in April 1869, more than 270,000 revolvers had been made. Though the weak .22 rimfire cartridge was a great handicap, problems had been overcome by 1861 and a .32 version appeared. Six shot .32 Model No. 2 revolvers were joined in 1864 by the five shot Model No. 12. These lasted in production until 1870. However, the failure of .41 rimfire Model No. 3 left S&W without a large calibre gun to challenge the cap lock →Colts.

¶ The first top break design appeared in 1868 with the hinge at the bottom front of the frame and an ejecting mechanism that worked automatically as the barrel was dropped. The .44 New Model No. 3 or ‘Model No. 3 Army Revolver’ was very successful, the U.S. Army agreeing to take a thousand in December 1870, and commercial sales were also encouraging. It was renamed ‘No. 3 →American Model’ after the introduction of the No. 3 →Russian Model in 1871. Production continued for some years, in two basic patterns. Most were .44 centre fires, though 3500 rimfire guns were also made. The Russian Model was made in large numbers until the late 1870s, but prevented Smith & Wesson establishing a hold on the U.S. domestic market for large calibre revolvers (much to the benefit of the Colt →Peacemaker).

¶ The first double action guns, designed largely by James →Bullard, were completed in 1879 in .32 and .38. The .32 →Double Action revolvers were made in five variants from 1880 until 1919, total production approached 330,000. The five shot .38 was also introduced commercially in 1880; by the time production ceased in 1911, more than 550,000 had been made in five major subvarieties.

In addition, about 55,000 .44 Double Action revolvers were made in 1881–1913.

¶ The break open revolvers were replaced by the first of the →Hand Ejector series, introduced in 1896. These guns found competition from the essentially similar →Colts hard to overcome, and no real headway was made until the first .38 Military & Police pattern appeared early in the twentieth century. Guns of this general pattern are still being made in large numbers, most of the differences concerning the size and frame and the trend towards target-grade sights and full-length ejector-rod shrouds.

¶ Though designated numerically since 1957, many S&W revolvers are still better known by names such as ‘Aircrewman’, ‘Airweight’, ‘Bodyguard’, ‘Chiefs Special’, ‘Centennial’, ‘Distinguished Combat Magnum’, ‘Distinguished Service Magnum’, ‘Hand Ejector’, ‘Kit Gun’, ‘Magnum’, ‘Masterpiece’, ‘Regulation Police’, ‘Service Kit Gun’, ‘Target Kit Gun’ and ‘Target Stainless’ (qq.v.).

¶ Smith & Wesson attempted to market semi-automatic pistols prior to the First World War, purchasing the rights to the Belgian →Clément in 1910 and modifications were made by Joseph H. →Wesson in 1910–12. The gun was introduced commercially in 1913, chambering a unique .35 S&W Automatic cartridge loaded with a half-mantle bullet to minimise bore wear. The magazine catch was changed from lateral to longitudinal in 1914, in search of simplicity, but work was suspended in 1916B19 and abandoned in 1922 when sales dropped below economic limits.

¶ The replacement was the .32 Automatic, developed by Edward →Pomeroy, which amalgamated the old frame with a new streamlined slide. However, less than a thousand pistols were sold in 1924B37. Success awaited the end of the Second World War, when the development of a double-action pistol inspired by the →Walther P. 38 was entrusted to Joseph →Norman. The first prototype was completed in the autumn of 1948, amalgamating a double-action trigger mechanism with the basic →Colt-Browning tipping-barrel breech. However, the U.S. Army requested a single-action trigger, and a handful of guns of this type were made in 1953.

¶ Limited production of the 9mm double-action pistol began in 1954, but work was very slow. The pistols were designated Model 39 (double-action) and Model 44 (single-action) in 1957, but the latter had been discontinued by 1959. Small-scale production of the Model 39 gradually increased, some being chambered in 1960–1 for the .38 AMU cartridge developed by the U.S. Army Marksmanship Training Unit. These alloy-frame pistols were originally known as the ‘Model 39-1’, subsequently changed to ‘Model 52’ and eventually altered to ‘Model 52-A’. A narrow-bar extractor driven by a coil spring replaced a broad spring-steel bar in 1971, but few other changes were made to a popular and successful design. See also ‘Master’.

¶ Introduced in 1971 and abandoned in 1981, the Model 59 was basically an improved double-action Model 39 with a fourteen-round magazine in a straight-back butt. Derivatives have included the Model 439 (discarded in 1988), an alloy-frame variant of the Model 39 with prominent back-sight protectors; the

Model 459, with an alloy frame and a staggered-row magazine; the Model 539, a steel-framed 439; and the Model 559, a steel-framed 459. Work on the Models 539 and 559 stopped in 1983.

¶ The Models 469 (blued, 1983–8) and 669 (stainless-steel, 1986–8) were compact versions of the double-action M459 with bobbed hammers, synthetic grips and recurved trigger guards. The Models 639 and 659, introduced in 1982 and abandoned in 1988, were stainless-steel versions of the 439 and 459 respectively. The Model 645 (1985–8) was an enlargement of the basic double-action design to chamber the .45 ACP cartridge, with a single-column box magazine in an elongated butt. The Model 745 (1987B90) had a single-action trigger, a ball-ended barrel and a fixed barrel bushing; magazine-release catches and safety levers were enlarged to satisfy 'practical-pistol' shooters.

¶ A new designation system appeared in 1990. The first two digits of any four-digit designation represent the basic model (e.g. 'Model 10', 'Model 39'), now customarily based on calibre; the third digit signifies an individual model; and the fourth digit identifies the manufacturing material. 'Third-digit' identifiers include '0' for a standard pattern; '1' for the compact versions; '2' for a gun fitted with a de-cocking lever; '3' for a compact pistol with a de-cocking system; '4' for a standard gun with its trigger mechanism restricted to double-action; '5' for a compact double-action-only gun; '6' for any gun with a non-standard barrel; '7' for pistols with non-standard barrels and de-cocking systems; and '8' for guns with non-standard barrels and double-action-only triggers. 'Fourth digit' identifiers are '3' for a combination of an alloy frame and a stainless-steel slide; '4' for an alloy frame allied with a steel slide; '5' for a steel frame and slide; '6' for guns with a stainless-steel frame and slide; and '7' for those combining a stainless-steel frame with a standard carbon-steel slide.

¶ The basic designs currently encompass the 1000 series chambered for the 10mm Auto cartridge; the 2200 series in .22 rimfire; the 3900, 5900 and 6900 series in 9mm Parabellum; the 4000 series in S&W .40 Auto; and the 4500 series in .45 ACP. The Model 4546, for example, is a .45-calibre pistol with a double-action-only trigger ('4') and a non-standard barrel ('6'). Few of these guns have been named, excepting the →Sportsman and the →LadySmith patterns.

¶ In addition to their locked breech military style automatic pistols, and the .22 M 41 series target guns described below, Smith & Wesson marked a tiny 6.35mm pocket pistol known as the →Escort.

¶ Introduced in 1957 after a development period lasting ten years, the Model 41 pistol was a .22 rimfire blowback destined for target shooting. Guns of this type have been made with long barrels, often fitted with muzzle brakes, or with extendible front sights. The Model 41-1 of 1960 was intended for rapid-fire competitions and chambered the .22 Short rimfire cartridge instead of the Long Rifle pattern. The Model 46 (1959–68) was a simplified Model 41, developed for the U.S.A.F and also touted briefly as a 'field gun'. Next came the Model 422 of 1987, an unusual internal-hammer blowback design offered as the →Field Model and →Target Model.

¶ No attempt has been made here to catalogue minor manufacturing variations of Smith & Wesson handguns, and the distinctions between the Models 10, 10-1, 10-5, etc, being ignored. Details should be sought from the standard books on the subject, notably *History of Smith & Wesson* by Roy Jinks (Beinfeld, 1977 and subsequent editions).

SMLE, S.M.L.E. An abbreviated form of the official British name for the '[Rifle] Short, Magazine, →Lee Enfield', encountered in designation marks; more commonly known as the 'Smelly'.

Smok A brand name used on a 6.35mm pistol made by →Nakulski of Gneizno.

Smokeless Diamond: see 'Diamond'.

Smokeless Powder & Ammunition Co. Ltd ['The...']; London? The 'S.P. & A. CO.' mark of this short-lived business (1898-1907?) has been reported in the headstamps of 12-bore shotgun cartridges.

Smoker Introduced in 1875, this .22, .32, .38 or .41 →Johnson & Bye revolver had a fluted cylinder and a squared grip with a humped backstrap ('Russian Handle').

Smoky City A →Suicide Special revolver made in the U.S.A. by the →Harrington & Richardson Arms Company of Worcester, Massachusetts. It dates from the late nineteenth century.

Smoot. William Smoot, a gunsmith employed by E. →Remington & Sons, was granted U.S. Patent 143,855 of 21st October 1873 to protect improvements in revolver design exploited in the Remington →New Line series.

Smooth A general term for smooth bored 'rifles'.

Smythe Joseph F. Smythe, an 'outside' member of the London gun trade, was established at 13 Blackwell Gate, Darlington, in 1895. He moved to 12 Horse Market in 1896, but the London directories are silent thereafter; additional premises were subsequently opened in Stockton-on-Tees. Smythe's marks have been found on a variety of shotgun cartridges, including 'Durham Ranger', 'The Field', "Smythe's Champion" and "Smythe's Special Load".

SN An abbreviation of the name of the Soviet →Savin-Norov aircraft machine-gun, made in small quantities in the 1930s.

Sneezum H. & R. Sneezum; 14B20 Fore Street, Ipswich, Suffolk, England. The marks of this East Anglian gunmaker have been recorded on shotgun cartridges sold under names such as ASneezum's Anglia", accompanied by a bounding rabbit, and ASneezum's Special High Velocity Load". They seem to have been supplied by →Eley-Kynoch.

Sneider C. Edward Sneider; Baltimore, Maryland, U.S.A. In March 1862, Sneider was granted U.S. Patent xxxx to protect an 'Improvement in Revolving Fire Arms'. The Sneider revolver had a two row cylinder and an extended hammer nose. When seven shots had been fired, the action was opened and the cylinder was reversed so that another seven rounds could be fired.

Snell George C. Snell. See 'George C. →Schnell'.

Snider Jacob Snider was an American, but is best remembered for the success of his lifting block conversion system adopted by the British government in 1867. Snider conversions were applied to a range of British service weapons, such

as the P/1853 (Enfield) rifle musket, the P/1855 (Lancaster) engineer carbine and the P/1858 naval short rifle. The system was also used in Denmark, on the M1848–65 short rifle and the M1853–66 navy rifle, whilst the French Tabatière conversion was essentially similar—though the French cited the existence of earlier patents (notably Clairville's of 1853) to avoid paying licensing fees. A few 11mm calibre Snider type rifles were also made in Spain during the Carlist Wars of 1873–5, probably for one of the feuding factions. They are marked LA AZPEITIANA. The breeches swung to the right, while the back sights were similar to those of the 1871 model Spanish Remington rifle.

Snider Rifles & Cartridges [Company]. This business was presumably established to protect the rights of Jacob →Snider's executors, this agency maintained an office at Chatham Buildings, London EC, in 1878–9.

Snipe ['The...']. A mark found on shotgun cartridges loaded by the →Chamberlain Cartridge Company of Cleveland, Ohio.

Sniper Usually found as 'The Sniper'; a mark found on shotgun cartridges loaded, or perhaps simply sold by →Emslie of Elgin since the Second World War.

Sniper A break barrel spring air rifle made in Spain by →El Gamo of Eibar and sold in Britain by →ASI. The Sniper Repeater had an additional tubular pellet magazine above the air chamber.

Sniper rifles The unexpected rise of trench warfare in 1914–15 renewed interest that had lain dormant since the American Civil War. The first moves, by virtually every participant, saw the requisition of hunting rifles.

¶ The British acquired a variety of Mausers, Mannlichers and Lee-type sporting guns, fitting them with →Galilean and conventional optical sights. The German Jagdgewehre were mostly Mausers fitted with commercial Gérard, Goerz and Zeiss telescope sights, but a few Gewehre 98 with 4× Goerz 'Certar Kurz' were soon being tested on the Western Front. One major problem concerned the supply of ammunition, particularly as some of the British rifles chambered cartridges other than the regulation .303, and the German sporting rifles customarily chambered the Patrone 88 instead of 'S' Munition.

¶ The first purpose-built sniper rifles included fifteen thousand German *Zielfernrohr Gewehre* 98—subsequently known as *Scharfschützen Gewehre*—though these were little more than specially selected and finished infantry rifles with Goerz or Zeiss 4× telescope sights fitted in two ring mounts offset to the left to allow the magazine charger to be used. British marksmen preferred Long Lee-Enfields until the advent first of the P/1914 and then Canadian Ross rifles displaced from service the SMLE. These were fitted with a variety of sights, though the Periscopic Prism Company and Aldis Brothers patterns eventually prevailed. The U.S. Army initially used ineffectual Warner & Swazey 'Telescopic Musket Sights', and the French fitted the 3× 'Mle 1916' to selected Lebel.

¶ The need for sniping disappeared between the wars, only to reappear in 1939. The Germans had maintained their interest, fitting a variety of conventional and low-magnification long eye-relief sights to the Kar. 98k, and the Russians had always regarded sniping as an integral part of infantry attacks. Consequently,

the →Mosin-Nagant sniper rifle, *Snayperskaya vintovka obr. 1891/30*, was issued in very large numbers. An attempt was also made to issue semi-automatic Tokarevs in quantity, but the resulting SNT did not prove to be as accurate as the Mosin-Nagant. The British initially made do with refurbished P/1914 rifles, but then developed the Lee-action 'Rifle No. 4 (T)'; the U.S. armed forces had a variety of M1903A4 bolt-action →Springfields and optically sighted M1C and M1D →Garands.

¶ As sniping has been accorded specialist studies of its own in recent years, a variety of modern equipment has appeared. Many of these guns are accompanied by sophisticated electro-optical and thermal-imaging →sights, and more details may be found in books such as *The World's Sniping Rifles* (in the Greenhill/Stackpole Military Manual series, 1998). The historical aspects of sniping may be learned from works of Peter Senich and Richard Law.

Snook Charles W. Snook. Operating in the 1870s, this government arms inspector accepted →Colt revolvers marked 'CWS'. See also "U.S. arms inspectors' marks".

Snow Charles H. Snow; New Haven, Connecticut, and later Stockton, California, U.S.A. A partner in →Snow & Cowe and co patentee of an air pistol with Edward H. →Hawley. See U.S. Patent 112,886 of September 1871. Made by Snow & Cowe, the guns were marketed commercially as the →Kalamazoo. A second patent—U.S. no. 752,932—was granted on 23rd February 1904 to 'Charles H. Snow' to protect the design of a magazine gun.

SNT *Snayperskaya* [vintovka] *Tokareva*: applied to specially-selected →Tokarev auto-loading rifles fitted with optical sights on a mount curving forward from the back of the receiver. See also 'SVT'.

SO.C.CO.: an abbreviation used in the headstamps of cartridges made by the →Southern Cartridge Co. of Houston, Texas, U.S.A.

Sociedad Española de Armas y Municiones, or 'SEAM'; Eibar, Guipuzcoa, Spain. The affairs of this gunmaking business are still shrouded in mystery, and it is by no means certain how great a part SEAM played in the construction of the automatic pistols marked →Diana, →Praga, →S.E.A.M., →Sivispacem and →Waco. The 'Diana' is also often alternatively attributed to →Erquiaga, Muguruza y Compañía and 'Waco' was made for the dealer Tomás de →Urizar.

Società Armi Bresciane SRL ('SAB'), Via Artigiani 93, Gardone Val Trompia. This Italian gunmaking business is best known for rifles and sporting guns, often made under the name of Renato →Gamba, but has also made handguns and a →Mauser action sporting rifle in conventional or →Battue form for snap shooting at driven game. The shotguns are often superbly decorated with delicate English-style bouquets, scrolls and animals, and can be inlaid with precious metals on request. See also 'Ambassador', 'Concorde', 'Daytona', 'London', 'Maxim', 'Mustang', 'Oxford', 'Prince' and 'Trident'.

Società Metallurgica Italiana This Italian cartridge making company headstamped cartridges with the initials 'SMI'.

Société Alsacienne de Constructions Mecaniques, also known as 'SACM'; Cholet, Alsace. This metalworking company made substantial quantities of the French

- 7.65mm Mle 35 service pistol 1937–40 and on into the period of German occupation. Though basically dropping-barrel recoil-operated →Brownings, the guns were made in accordance with patents granted to Charles →Petter in the early 1930s and incorporated improvements in the trigger/hammer mechanism.
- Société Anonyme Commerciale Belge** This Liège-based promotional agency was regarded as a member of the London gun trade in 1884, when an office was maintained at 12 Lime Street, EC.
- Société Anonyme Établissements Hotchkiss**, based in Saint-Denis (near Paris), made the well-known strip-feed →Hotchkiss machine-gun prior to 1918.
- Société Belge d'Optique et d'Instruments de Précision** A Belgian telescope sight maker; see 'Saive'.
- Société d'Applications Générales, Électriques et Mécaniques**; also known as 'SAGEM'. A manufacturer of French 7.65mm Mle 35S and Mle 35SM1 service pistols, 1946–51. See also 'SACM', 'Saint-Étienne'.
- Société d'Armes [de] Paris** A 6.35mm six-shot →Browning-type pocket pistol said to have been made in France prior to 1940 by →Manufacture d'Armes des Pyrénées. The slides may be marked FABRICATION FRANÇAISE. ST. ÉTIENNE. Some guns have a grip safety; others do not.
- Société d'Armes 'HDH'**, once 'Henrion, Dassy & Heuschen'; Liège, Belgium. Maker of a small 6.35mm calibre automatic pistol known as the →H&D prior to 1914.
- Société des Anglais** [la]. Also known as 'La Société pour les Armes de Guerre Ancion & Cie, Renkin frères, Pirlot frères et Auguste Francotte', this association of Liège gunmakers formed to make 150,000 .577 'interchangeable' →Enfield rifle-muskets for the the British Board of Ordnance during the Crimean War. It installed U.S.-made production machinery, but disbanded in 1863 when the work had been completed.
- Société Française d'Armes Automatiques de Saint-Étienne** The French manufacturers of the last few →Hermetic pistols immediately after the end of the First World War, in succession to →Établissements Bernardon-Martin et Cie, and possibly also of the →Le Steph and →Securitas guns.
- Société Française d'Armes Portatives** ['SFAP'], Saint-Denis, France; manufacturers of →Hotchkiss machine-guns, and also the promoter of the →Daudetau rifles prior to the First World War.
- Société Française des Munitions de Chasse et de Guerre** ('SFM'). This French ammunition making business was formed in 1884, when the former →Gevelot & Gaupillat changed its name, and traded until renamed 'Gevelot SA' in 1950. Substantial quantities of ammunition were made, usually distinguished by the headstamps 'SFM' or 'GG', the latter often being reserved for rimfire cartridges and primers.
- Société Générale Mécanique**; 6 cours Fauriel, Saint Étienne, France. Listed in 1951 as a gunmaker, responsible for a variety of sporting firearms including the →Bretton shotgun.
- Société Industrielle Suisse**: see 'SIG'.
- Société Liégeoise** [la]; Liège, Belgium. A gunmaker involved in the 1870s with le

→Grand Syndicat.

Société Moderne de Fabrications Mécaniques ['SMFM']; 56 rue Tarentaize, Saint Étienne, France. Listed among the gunmakers operating in the district in 1951.

Société Stéphanoise d'Armes; rue de la République 14, Saint Étienne. Listed in 1892, this French gunmaking business was formed in the 1880s to make high quality sporting guns, revolvers of all types. It was also advertised as 'sole agent for France and the colonies for the patents of M Paul →Giffard for the manufacture and sale of guns of the new ballistic of liquefied gas'. The Giffard guns, previously made by →Rivolier, gained Société Stéphanoise a gold medal at the Saint Étienne industrial exhibition in 1891.

Société Manufacturière d'Armes ['SMA']; rue Tréfilrière, Saint Étienne, France. Listed in 1892 as a gunmaker.

Soderholm W.H. Soderholm, then ranking as a U.S. Army major, accepted M1911A1 pistols made by →Colt's Patent Fire Arms Mfg Co. Dating from the mid 1930s, the guns will be marked 'WHS'. See also "U.S. arms inspectors' marks".

Sodia Franz Sodia of Ferlach in Kärnten, Austria, was best known in the 1950s for good-quality sporting rifles built on the Mannlicher Schönauer action, but turned his attention to the →Mauser in the 1960s. The guns often had a Bavarian style cheek piece and an oddly humped comb. Chamberings ranged from .220 Swift to 9.3×64mm. See also →Super Express.

Sokolov Alexander Alexeyevich Sokolov, born in Petropavlovsk in 1869, graduated from the Mikhailovskaya Artillery School in 1890. While serving with the 24th Artillery Brigade in 1890–6, he became acquainted with Pavel Tretyakov, with whom he developed several improvements in large-calibre ordnance. Sokolov subsequently graduated from the artillery academy (1899) and in 1903 became director of the workshop attached to the artillery technical school in the St Petersburg ordnance factory. Working for the Chief Artillery Directorate from 1904, Alexander Sokolov developed a special wheeled mount for the Russian Maxim ('PM') machine-gun. The original design had two additional folding legs, converting into a tripod, but these were abandoned during the First World War to accelerate production. Sokolov went on to become a permanent member of the Special Artillery Experimental Committee, taught at the artillery academy, and retired in 1934. He undertook special assignments on the Leningrad Front during the early part of the Second World War, but died in 1943.

Sokolov Yuri Mikhailovich Sokolov (1929–87) was co-designer with Grigory →Nikitin of the Soviet →Nikitin-Sokolov or 'NS' universal machine-gun.

Soleilhac François Soleilhac; Saint Étienne, France. Listed in 1933 as a gunmaker, and in 1951 at 12 rue des Armuriers.

Sollaceo J.N. Sollaceo, a government arms inspector working prior to 1850, accepted firearms and equipment marked 'JNS'. See also "U.S. arms inspectors' marks".

Solothurn, 'Waffenfabrik Solothurn', Switzerland—see 'Steyr Solothurn'.

Somers & Sworder; Bishops Stortford, Hertfordshire. The marks of this English gunmaking partnership have been reported on self cocking →pepperboxes

- dating from the middle of the nineteenth century.
- Sommerville** A. Sommerville, a partner in →Braendlin & Sommerville, may have been Belgian or French. He was the co designer with Charles F. →Galand of a series of ejector levers for revolvers. See British Patent 3039/68 of 5th October 1868.
- SONAZ** An acronym applied to Soviet/Russian cosmonauts' support kit, which included the TP-82 multi-barrel pistol and appropriate ammunition. The gun was designed by →Paramonov, Upirov and Ochnev.
- Sonnen and Sonnenmarke** Names found on shotgun cartridges manufactured by →Wolff & Co. of Walsrode, Germany, prior to 1911. They were usually accompanied by a sun face with the rays partly composed of the letters 'W'.
- Soper** Richard Soper, later 'R. & W. Soper'; 138 Friar Street, Reading, Berkshire. This English gunmaking business was founded sometime prior to 1850, but had become 'R. & W. Soper' by 1862. Sporting guns, pepperboxes and cap lock revolvers are known from this period. By 1868, however, the partnership had been dissolved and operations were continued by William Soper (below) alone.
- Soper** Gunmaker William Soper of 138 Friar Street, Reading, Berkshire, previously a partner in R. & W. Soper (see Richard Soper, above), is best known for a single shot rifle with a laterally pivoting breech block. This was the subject of British Patent 2151/65 of 19th August 1865, which protected an underlever cocker, and a side lever adaptation protected by British Patent 3637/67 of 30th November 1867.
- Sora** ['The...']. A mark found on shotgun ammunition loaded by the →Chamberlain Cartridge Company of Cleveland, Ohio.
- Soulier**; 83 rue Antoine Durafour, Saint Étienne, France. Listed in 1951 as a gunmaker.
- South African Model** A large →blowback semi-automatic pistol made in Britain by →Webley & Scott Ltd of Birmingham, c. 1923–30. Little more than the original 9mm Short Webley & Scott pistol with a radial safety lever high on the left side of the slide, chambered for the 9mm Browning Long cartridges, 'South African' guns had cylindrical barrels projecting from short slides, external hammers, and near-vertical grips. The name was applied in recognition of an important colonial export market.
- Southampton** ['The...']. This brand name will be found on shotgun cartridges handled by Cox & Clarke of Southampton. See 'John →Cox'.
- Southern Armoury**; Britain. See B. →Webster & Company and →Collins Brothers.
- Southern Counties Agricultural Trading Society** ['The...'] ('SCATS'); Winchester, Hampshire. The marks of this co-operative, accompanied by an illustration of a hen pheasant, have been found on shotgun ammunition distributed as 'The Challenge Smokeless'. Excepting that the cases were supplied from Europe, the origin of the cartridges remains uncertain.
- Southern Arms Company** A brand name associated with shotguns made by the →Crescent Gun Company.
- Southern Cartridge Company**; Houston, Texas, U.S.A. A small independent

ammunition maker, this business marked its products with 'SO.C.CO.'

Southerner This single barrel cartridge derringer, loaded by swinging the barrel away from the frame, was made by the →Merrimack Arms & Mfg Co. and the →Brown Mfg Co. in 1867–73. It has been re created more recently by →Classic Arms.

Southgate Thomas Southgate. A gunmaker recorded at 6 Burton Crescent, London WC, from 1896 until 1900 or later. Patentee of the 'Southgate →Ejector'.

Southgate & Mears This gunmaking partnership was to be found in 1884 at 4 George Yard, Wardour Street, London.

Southron A →Suicide Special revolver made in the U.S.A. by →Johnson, Bye & Company and/or →Iver Johnson of Worcester and Fitchburg, Massachusetts, in the late nineteenth century.

Southwell William Samuel Southwell. An English gunmaker listed in Old Ford Road, East London, from 1856 until 1870.

Souviguet Rue Saint Roch 29, Saint Étienne, France. Listed in 1879 as a gunmaker, and possibly also in 1892 at rue Saint Roch 23.

Souviguet Rue Mulatière 23, Saint Étienne. Listed in 1892 as a gunmaker. It seems possible that these two establishments may be one and the same.

Souzy jeune; place Dorian 1, Saint Étienne, France. Listed in 1879 as a distributor of and agent for arms and ammunition.

Sowman J.W. & E. Sowman; Olney, Buckinghamshire. This English ironmongery business sold shotgun ammunition marked 'The Sureshot Smokeless'.

SP, *often encircled*. A private proof mark used by the →Savage Arms Company.

SP Found on U.S. military firearms and accessories. See 'S. →Priestley'.

Spack: see →Benjamin Rifle Company.

Space Rifle A single shot bolt action pattern made by →Ljutic Industries.

S.P. & A. CO.: found in the →headstamps of shotgun cartridges made in Britain by the short-lived →Smokeless Powder & Ammunition Company.

Spandau arms factory: see 'Königlich Gewehrfabrik, Spandau'.

Spandauer-Selbstladepistole Also known as the 'M1896', this rarely-encountered pistol was tested in Germany in the 1890s. It was not successful enough to challenge even the earliest semi-automatic pistols (i.e., the →Borchardt) and was speedily abandoned.

Spanish Model or 'Spanish Model Remington'. A name given in the 1870s by E. →Remington & Sons to a version of the standard military →rolling-block rifle chambering the .43 centrefire cartridge; it accepted a socket bayonet. See also 'Civil Guard Model', 'Egyptian Model' and 'French Model'.

Sparkbrook Royal Small Arms Factory ['RSAF'], Montgomery Street, Sparkbrook, Birmingham. This factory was purchased by the British Government in 1886 from the liquidators of the →National Arms & Ammunition Co. Ltd, having stood idle since 1883. Production of →Lee Metford rifles began in 1889, followed by →Lee Enfield and Mk I SMLE rifles made until the factory was sold to the →Birmingham Small Arms Co. Ltd in 1906. Though BSA assembled a few Mk I SMLE rifles marked B.S.A.-SPARKBROOK or B.S.A. C1 over SPARKBROOK in

- 1906–7, work was subsequently concentrated in the Small Heath factory and firearms related work in Sparkbrook ceased. The Sparkbrook inspectors' mark was a crown above a Roman (upright) letter 'B'. See also →Snider.
- Sparkford Vale** ["The..."]. This mark will be encountered on shotgun ammunition sold by H.C. →Little & Son of Yeovil, Somerset, England.
- Spaulding** Sidney P. Spaulding, a lieutenant-colonel in the U.S. Army, accepted .45 M1911A1 pistols made in 1939–40 by →Colt's Patent Fire Arms Mfg Co. They bore 'SPS' identifiers. See also "U.S. arms inspectors' marks".
- SPB** Found on U.S. military firearms and accessories. See 'Samuel P. →Baird'.
- Spearman** J. Spearman, a gunsmith (but originally also a gun-stock maker), was first recorded in Swallow Gardens, London, in 1833. He subsequently moved to Prescott Street in 1839; to 25 & 26 Chamber Street, London E, in 1845; and to 73 Great Prescott Street in 1863. Trading appears to have ceased in the mid 1860s.
- Specht** A brand name associated with shotgun cartridges made by →Pulverfabrik Hasloch prior to the First World War.
- Special** ["The..."]. A mark reported on a 12-bore shotgun cartridge made by →Eley Bros prior to the First World War for W. →Metcalf of Catterick.
- Special Brown** ["The..."]. Associated with shotgun cartridges sold by →Garden of Aberdeen.
- Special Clay King** Found on English shotgun cartridges. See 'Clay King'.
- Special Commando Knife** A name given to a Soviet/Russian combination knife bayonet.
- Special Game** ["The..."]. On British shotgun ammunition. See 'George →Newham & Company'.
- Special Grade Rifle** This was a version of the 1899-pattern →Remington-Lee sporting rifle, with a sturdier stock of selected walnut.
- Special I.X.L.** ["The..."]. A brand name found on shotgun cartridges sold by George →Hinton of Taunton, England, after 1918.
- Special Model** Associated with a Mauser pattern sporting rifle, built on an →FN action by →Cogswell & Harrison, in chamberings ranging from 7×57mm Mauser to .404 Nitro Express or .458 Winchester. It had a better quality stock and finish than the →Longford. The "Take Down" model was similar, but had an interrupted screw joint between the action and the barrel. The De Luxe Model was a Special Model with a select walnut stock and a →Cape or →Express back sight.
- Special Navy Rifle** Made in Japan in 1945, exclusively in Yokosuka navy arsenal, this was basically a crude cast iron training rifle receiver with a barrel modified to receive the locking lugs directly in the enlarged chamber. This allowed ball ammunition to be fired without blowing the gun apart.
- Special Rabbit** ["The..."]. Found on shotgun ammunition distributed by T.H. →Moor of South Molton and Exford. Origins unknown.
- Special Service** A brand name associated with shotguns made by the →Crescent Gun Company.
- Special Skeet**, or FN-Special Skeet'. A tradename used by →Fabrique Nationale

d'Armes de Guerre on shotgun ammunition, c. 1932B40.

Special Twenty ['The...']. This was associated with 20-bore shotgun ammunition created by the →New Normal Ammunition Co. Ltd of Hendon (London), from parts purchased in Germany. The propellant was apparently →Walsrode Jagdpulver.

Speed Joseph J. Speed joined the staff of the →Royal Small Arms Factory at the age of 25, rising to become Assistant Manager and then Manager (1891B1909). He received several British Patents, including 6335/87 of 30th April 1887, for a magazine cut off mechanism; 13,335/87 of 1st October 1887, for an improved magazine, long range sights, and a dust cover for the bolt; 17,944/87 of 30th December 1887 for a magazine spring; and 15,786/88 of 1st November 1888 to protect construction of a magazine, a hand guard and safety catch. Elements of these were all incorporated in the →Lee Metford rifle, guns being made commercially by the →Birmingham Small Arms →Metals Co. Ltd and the →London Small Arms Co. Ltd being marked LEE SPEED PATENTS. Patenting designs in his own name whilst in government employment attracted much adverse comment at the time. However, Speed was subsequently granted three patents jointly with the Superintendent of the Enfield factory, Colonel Henry →Watkin.

Speedmaster Found on several rifles made by the →Remington-UMC and the →Remington Arms Company. The 'Model 241A Speedmaster' was a .22 rimfire auto-loader, made in 1935-41 and 1945-51; it was basically a modernised Model 24 adapted for high-speed ammunition. It had a 24in barrel, and could be obtained in 'B' (Special), 'D' (*Peerless), 'E' (Expert) and 'F' (*Premium) grades. The 'Model 552A Speedmaster', introduced in 1957, was a modernised 550A. Lacking the floating-chamber system and its predecessor's ability to handle differing cartridges interchangeably, the 552A had a round-backed slab-side receiver. The deluxe 550BDL (1966 to date) had chequered woodwork, and, particularly on later guns, distinctive fleur de lys strapwork. The 552C carbine (1961-77) had a short barrel, and the 552GS (1957-77) chambered the low-power .22 Short rimfire cartridge was sold with retaining-chain eyes and spent-case deflectors for use in shooting galleries. See also 'Sesquicentennial'.

Speedwell ['The...']. Associated with shotgun ammunition bearing the marks of T.W. →Murray & Company of Cork; origins unknown (*Eley-Kynoch?).

Speedy Associated with →Mayer & Grammelspacher 'Diana' spring air rifles—particularly the junior patterns—sold in the 1920s by →Clyde's Game & Gun Mart of Glasgow.

Spencer The marks of gunmaker Alfred L. Spencer of Richmond, Yorkshire, England, have been reported on shotgun ammunition handloaded in Richmond from components supplied by →Eley-Kynoch.

Spencer Christopher Miner Spencer; South Manchester, Hartford and Windsor, Connecticut, and Boston, Massachusetts, U.S.A. This inventor (1841-1922), renowned for his brilliance in several differing fields, patented his tube magazine repeating rifle on 6th March 1860 (U.S. no. 27,393). Large quantities of rifles

and carbines were made for the Federal government during the American Civil War. In addition to the master patent, reissued in April 1864 and assigned to the Spencer Repeating Rifle Co., Christopher Spencer was granted U.S. Patents 34,319 of 4th February 1862 for a laterally swinging breech block with an attached hammer; 38,702 of 26th May 1863 (ante dated to 3rd January) for an oscillating breech block containing a cartridge tube; 45,952 of 17th January 1865 for an improved magazine tube; 58,737 and 58,738 of 9th October 1866 for improvements to the basic radial breech design. After concentrating his energies elsewhere, Spencer returned to gunmaking to develop a slide action shotgun. Patented jointly with Sylvester H. →Roper on 4th April 1882, no. 255,894, the guns were made first by the →Spencer Arms Company and then under the control of Francis →Bannerman & Son. Spencer's last firearm patents were 135,671 of 11th February 1873 and 299,282 of 27th May 1884, the latter jointly with Richard →Rhodes. However, he had also been granted 36,062 of 29th July 1862 for a cartridge retractor (assigned to Charles Cheney) and subsequently obtained 386,614 of 24th July 1888 for a safety lock mechanism.

Spencer F.P. Spencer; Lugley Street, Newport, Isle of Wight. The marks of this gunsmithing and ironmongery business have been seen on a variety of shotgun cartridges (date and origins unknown) distributed as ASpencer's Vectis Bunnie" and 'Vectis Special Loading'. Some may also include 'F.P.S.' in the marking, or a coat-of-arms customarily identified as that of the Isle of Wight but more plausibly of Newport.

Spencer Matthew Spencer. This English gunsmithing business traded from Lynn Regis (now King's Lynn), Norfolk, successively occupying premises in Red Cow Street in 1804–22 and High Street in 1829–53. Spencer made (or possibly simply marked) sporting guns, reservoir airguns and revolvers.

Spencer M.S. Spencer; Lyme Regis, Dorset, England. The marks of this gunmaker have been reported on self cocking →pepperboxes dating from the middle of the nineteenth century. However, the identification may arise from misreading Lynn Regis as 'Lyme Regis': see 'Matthew Spencer', above.

Spencer Arms Company; Hartford, Connecticut, U.S.A. This gunmaking business produced the first commercially successful slide action shotgun, patented by Christopher →Spencer and Sylvester →Roper in 1882–5. A stubby fore grip was used to pivot the breech block, cartridges being fed from an under barrel tube. A few rifles were made for U.S. Army trials, but the 12 bore shotgun was more successful. The business failed in 1889, its assets passing to →Pratt & Whitney and thence to Francis →Bannerman & Sons.

Spencer Gun Company A brand name associated with shotguns made in the twentieth century by the →Crescent Gun Company, used long after the original business had disappeared.

Spencer Repeating Rifle Company, established in 1862 in Boston, Massachusetts, U.S.A., made the breechloading magazine guns designed by Christopher Spencer (above) in the Chickering Piano Company building in Tremont Street. The business was absorbed by the →Winchester Repeating Arms Co. in 1870.

Spencer Revolver Company: see 'Otis →Smith'.

Spencer-Roper rifle Designed in the late 1870s and made in accordance with U.S. Patent 255,894 granted to Sylvester →Roper on 4th April 1882, these slide-action guns were tested by several armies in .45–70 and 11mm chamberings. The earliest examples ejected vertically, but later short-action examples ejected laterally to the right. The rifles were unsuccessful, but 20,000 shotgun derivatives were subsequently made by the Spencer Repeating Arms Company (c. 1886–90) and Francis Bannerman & Sons (c. 1890–2).

Spesco A mark associated with the Spesco Corporation of Atlanta, Georgia, U.S.A. They will be found on a variety of guns and accessories, including SM-11 pistols purchased from →Reck in Germany.

Spesco Corporation ['The...']; Atlanta, Georgia. A U.S.-based importer of a variety of guns and accessories from Europe, including 6.35mm →Reck SM-11 pistols.

SPI: see 'Syndicat des Pièces interchangeables'.

Spiller & Burr made eight hundred brass-frame .36 calibre copies of the →Whitney navy revolver in 1863. The government of the Confederate States of America purchased the business in January 1864, moving the factory to Macon, Georgia, where 750 guns were made before work ceased in November.

Spirlet Gunmaker A. Spirlet of 5 Quai de la Boverie, Liège, Belgium, was granted British Patent 2107/70 of 1870 (communicated by way of agent John Piddington) to protect a break-open revolver with a simultaneous-ejection system in the form of a manually-operated star plate set into the rear face of the cylinder.

Spiro Benny Spiro; Hamburg, Germany. Established in 1864, Spiro was one of the principal dealers of 'war weapons and munitions', which were exported and imported in vast quantities. Business failed to survive the depression of the early 1930s and the rise of the NSDAP to power.

Spitalsky Antonin Spitalsky, after collaborating in the redesign of the →Werndl rifle in the mid 1870s, produced a series of drum magazine bolt action guns in 1879–84 on the basis of the German Mauser M1871. Konrad →Kromar improved the ruggedness of the system in 1885, but the Kromar-Spitalsky rifle was too late to challenge the →Mannlicher.

Spitfire A semi-automatic pistol made in Britain by John →Slough Ltd of Hereford, chambered for the 9mm Parabellum of .40 S&W cartridges. Dating from the early 1990s, the guns were derived from the Czechoslovakian CZ 75.

Spitfire A →Suicide Special revolver made by the →Hopkins & Allen Arms Company of Norwich, Connecticut, in the late nineteenth century.

Spittin' Image Applied by the →Daisy Mfg Co. to several products, particularly those based on the Winchester lever-action rifle (e.g., Models 1894, 3994 or 3030).

SPIW, 'Special Purpose Infantry Weapon': see →ArmaLite.

S.P.L. or SPL Marks found on shotgun ammunition used exclusively by the London Sporting Park. See also 'LSP'.

Split-breech A term used to describe the action of carbines purchased by the Federal authorities during the Civil War, designed by Leonard →Geiger and

perfected by Joseph →Rider. Patented in the names of Rider and Remington in 1865, the high wall receiver contained a radial breech-block. The nose of the hammer struck the rimfire cartridges through a slot in the top surface of the block. Fifteen thousand .56–50 Remington-Geiger carbines were made by E. Remington & Sons of Ilion in accordance with an order of 24th October 1864, followed by five thousand smaller guns ordered in January 1865 for a .46 rimfire cartridge, which put less strain on the action. Their frames were notably smaller than the .56–50 pattern. The walnut butts of Remington-Geiger carbines had a straight wrist, their half length fore ends were held by a single band, and sling rings were anchored on the left side of the case hardened receivers.

Spooner: see 'Withers & Spooner'.

Spooner G.A. Spooner. This government arms inspector, working from c. 1900 until the beginning of the First World War, accepted items marked 'GAS'. See also "U.S. arms inspectors' marks".

Spörer Albin Spörer; Zella St Blasii in Thüringen, Germany. Listed in the Deutsches Reichs-Adressbuch for 1914 as a gunmaker. Later 'Albin Spörers Sohn', owned by Otto E. Spörer (below).

Spörer Oskar Spörer; Zella Mehlis in Thüringen, Germany. Listed in 1920B30 as a 'weapon maker'.

Spörer Oskar & W. Spörer; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a master gunsmith.

Spörer Otto E. Spörer; Zella Mehlis in Thüringen, Germany. Listed in 1920 as a gunmaker.

Spörer & Harl, employees of the Bavarian government arms factory in →Amberg, patented a bolt action rifle in 1882. The basic mechanism was adapted from the 1871 type Mauser, but a gravity feed case magazine in the butt fed the breech by a →Hotchkiss like feed way and elevator system.

Sport French: see 'Buffalo-Sport', 'Populaire-Sport'.

Sport Also known as 'Universal Sport'; Czechoslovakia. See 'Universal'.

Sport A →Suicide Special revolver made in the U.S.A. by the →Ryan Pistol Company of Norwich, Connecticut, in the late nineteenth century.

Sport & Munition: see 'SM'.

Sporting Clays, →Concode Sporting Clays or →Daytona Sporting Clays. These 12 bore over/under shotguns are made by →Società Armi Bresciane of Gardone Val Trompia. They have anatomical pistol grips, →schnabel tip fore ends and a single selective trigger mechanism. Barrels are 71 81cm long.

Sporting Life ['The...']. Associated with the shotgun cartridges sold by W.W. →Greener of Birmingham.

Sporting Model Applied to the octagonal-barrelled No. 2 →Ballard rifles, made in 1876–89 for rim- and centre-fire cartridges ranging from .32 to .44.

Sporting Model A name applied by →Colt's Patent Fire Arms Mfg Co., of Hartford, Connecticut, to semi-automatic pistols made to the patents of John M. →Browning. The .38 Model 1902 (1902–8) had moulded rubber grips and an inertia firing pin.

- Sportmodell** This term applies specifically to the bolt-action air rifles produced under the patents of Hugo →Schmeisser by C.G. →Haenel of Suhl prior to 1945—as the ‘Sportmodell 33’—and, during the early post war 1948 era, by VEB Fahrzeug und Gerätewerk ‘Ernst →Thalmann’ of Suhl as the ‘Sportmodell 49’ (or →Blitz). See also →Wehrsport Luftgewehr Model 33; all the guns fire 4.5mm ball ammunition.
- Sportsman**, usually found, as ‘The Sportsman’, on shotgun cartridges sold in Britain by, amongst others, →Garrick of Sunderland, and →Tickner of Bishops Waltham.
- Sportsman** A brand name associated with shotguns made by the →Crescent Gun Company.
- Sportsman** Found on a revolver made in recent years by →Smith & Wesson.
- Sportsman Bush & Field** This name was applied to a →Mauser action sporting rifle offered in the U.S.A. in 1984–8 by →Marathon Products, Inc. Built on a →Santa Barbara action in chamberings ranging from .243 Winchester to .30–06, the rifle could be obtained in kit form. It had a walnut stock with a low →Monte Carlo comb and a heavy squared tip fore end.
- Sportsman’s International Cartridge Company**; Kansas City, Missouri, U.S.A. This short lived ammunition maker, or possibly distributor, trading for a few years prior to the entry of the U.S.A. into the First World War in 1917, was responsible for cartridges headstamped ‘S.I.C. Co.’
- Sportsmaster** Guns made by the →Remington Arms Company. The ‘Model 341A Sportsmaster’ (1936–9) was a .22-calibre bolt-action rifle with a bigger stock than the others in the 341 series and a tube magazine beneath the barrel. The ‘Model 512A Sportsmaster’, made in 1940–1 and 1945–62, was an M341 with a radial-lever safety catch behind the bolt, open sights, and a plain pistol-grip half stock.
- Sport Waffenfabrik ‘Moll’**: see ‘Moll Sportwaffenfabrik, Lauenberg an der Elbe’.
- Sportsmatch** Found on telescope sight mounts: see ‘J. & J. Ford’.
- Spotfinder** [‘The...’]. A mark associated with shotgun cartridges handled by D.B. →Crockart of Perth, Scotland.
- SPP**, or ‘SPP-1’. A special silenced underwater pistol designed in what was then the Soviet Union by Vladimir →Simonov.
- Springer** A mark found on ‘Bazar’ (q.v.) knife pistols, indicating that the knife components, if nothing else, had been provided by Wilhelm →Weltersbach of Solingen.
- Springfield-Allin rifle**, or ‘Trapdoor Springfield’. A prototype designed by Erskine →Allin appeared in the summer of 1865, performing well enough for large quantities to be ordered for field trials. About five thousand .58 rimfire rifles were made in the Springfield factory in 1865–6. They were adapted 1863 pattern cap lock rifle muskets with a new breech-block hinged laterally at the front of the action. The block could be swung up to reveal the chamber, but the alteration was much too complicated; the ratchet pattern extractor was weak and the cartridge performed poorly. As soon as the first M1865 Allin type

conversions were being issued for trials, a search began to find a better weapon. The M1865 was soon replaced by the M1866, with its barrel lined down from .58 to .50, and a simplified extractor. Trials still favoured the →Berdan as the best conversion and the →Peabody being the best new rifle, but the .50 Allin was controversially selected for production. An improved version was approved on 5th May 1873. As the Allin breech had cost the U.S. Treasury more than \$124,000 to settle patent infringement claims, the government was reluctant to make wholesale changes. Virtually all Allin type guns were made by the National Armory in →Springfield, Massachusetts. Many differing models were introduced prior to 1889. Many obsolete .50–70 Model 1865 and Model 1866 →Trapdoor Springfields were converted in the 1880s to make inexpensive 12 or 16 bore shotguns. They are customary recognisable by their short fore ends.

Springfield Armory (or 'National Armory'). Founded in the small Massachusetts town of Springfield in 1782, though no guns were made until 1794, this grew to become the principal government owned small arms factory—making M1903 bolt-action rifles at the rate of 1500 daily by November 1918. The site extended in 1933 to 297 acres, but even this was extended during the Second World War. The factory has made a wide range of firearms, including →Burton, →Chaffee Reece, →Enfield, →Garand, →Hotchkiss, →Krag Jørgensen, →Remington, →Sharps and →Springfield (Allin and Mauser types) rifles. →Colt-Browning pistols have also been made there, but operations were scaled down until the factory, then no more than a grandiose repair-shop, was closed in the 1980s.

Springfield Armory, Inc.; Geneseo, Illinois, U.S.A. A current manufacturer of .45-calibre pistols based on the Colt M1911A1 and rifles based on the M14.

Springfield Arms Company Based in Springfield, Massachusetts, this gunmaking business made revolvers designed by its superintendent, James →Warner. The .40 calibre six shot 'Dragoon Pistols' were followed by the .31 'Jaquith Patent Belt Model', though the relevant patent had very little to do with the gun. Next came the Warner Patent Belt Model, with a modified Jaquith pattern cylinder rotating hand and (from 1852) a two trigger mechanism and Warner's patent rammer. A few .36 calibre six shot Warner Patent Navy Model revolvers were made in the mid 1850s, mostly with the twin trigger mechanism, and the .28 six shot Warner Patent Pocket Models with cylinders rotated by the hammer, a ring trigger or the perfected two trigger system. The company failed about 1863, allowing James →Warner to continue operations under his own name.

Springfield Arms Company A brand name associated with shotguns made by the →Crescent Gun Company.

Springfield rifle, bolt-action This rifle, a replacement for the →Krag-Jørgensen in U.S. service, was the culmination of experiments with Mauser-type actions that dated back to 1900. The original full-length rifle had been superseded by an improved short-barrel as soon as the U.S. authorities realised that the British were working on the short →Lee-Enfield.

¶ The original M1903 rifle was approved for service on 19th June 1903, but work was suspended in January 1905 to allow details of the design to be reconsidered.

The Chief of Staff of the U.S. Army soon reported that the reduction in barrel length was acceptable, but that the rod bayonet should be replaced immediately with a sword pattern. The back sight was changed in May 1905, a pointed 'spitzer' bullet was adopted in October 1906 (changing the sight graduations), and a solid tubular back sight mount replaced the skeletal pattern in 1910.

¶ The first guns were made exclusively by Springfield Armory ('S.A.'). Though work had soon begun in Rock Island Arsenal ('R.I.A.'). When the First World War began, however, only Springfield was making rifles and the machinery in Rock Island, which had lain inactive since 1913, was immediately put back into commission. The M1903 Marksman's Rifle, the results of experiments undertaken in the early 1900s, was fitted with a 6× M1908 or 5.2× M1913 Warner & Swazey optical sight, but was neither popular nor successful.

¶ Work continued throughout the First World War, when a parkerised finish was adopted, an second recoil bolt was added through the stock, and the bolt handle was bent slightly backward. The M1903 Mark 1 was an adaptation for the →Pedersen Device, with an auxiliary sear in the trigger system and an ejection port in the left side of the receiver. Though the Devices were scrapped immediately after the end of hostilities, the rifles remained in service until they wore out.

¶ Increasing reports of receiver failures in 1917–18 were traced to poor heat treatment during manufacture and a new 'double treated' receiver was approved. The first Springfield-made guns of this type were assembled in February 1918, shortly before numbers reached 800000, and the first Rock Island example, no. 285507, was completed in May 1918. Work continued in Rock Island Armory until June 1918, but military production at Springfield Armory lasted until 1927. Thereafter, the only guns to be made were destined for National Match target shooting and the National Rifle Association. The M1903 NRA rifle was approved on 30th March 1915, to be sold to NRA members by the National Board for the Promotion of Rifle Practise; the M1903 NRA Sporter (1924–38) was a post-war equivalent, though enterprising gunsmiths (such as R.F. Sedgley of Philadelphia) many similar guns from military-surplus actions. A series of rimfire Springfields, the M1922, M1922M1 (1925) and M2 (1933), also dated from this era.

¶ Approved on 15th March 1929, the M1903A1 had a modified 'Style C' pistol grip stock instead of the straight wrist 'Style S'. The change in designation was authorised on 5th December, but few guns of this type were ever made; 'S'-type were still being used in 1939. A 'scant pistol grip' was approved in 1942 to enable under size or flawed stock blanks to be used. The simplified M1903A3 rifle, incorporating many stamped and fabricated parts, was approved in May 1942. The straight wrist stock lacked a grasping groove, and an aperture sight lay on top of the receiver bridge. The stamped trigger guard was deepened ahead of the trigger lever in 1943, allowing a gloved finger access to the trigger, but progress with the M1 →Garand and the →M1 Carbine allowed production contracts to be cancelled in February 1944.

¶ Extensive use was made of sub-contractors, including →Johnson Automatics, Inc., of Providence; R.F. Sedgley, Inc., of Philadelphia; and the →Savage Arms Company of Utica, New York. These three made barrels marked respectively with 'JA', an encircled 'S' and an angular 'S' within a square.

¶ Standardised on 14th January 1943, the M1903A4 sniper rifle was made exclusively by the →Remington Arms Company. The first guns had two groove cut rifling, but this was subsequently changed to a four groove draw formed pattern. The bolt handle was bent downward to clear the 2.5× Telescope M73B1, made by the W.R. Weaver Company and carried in a Redfield mount. The final batches of M1903A4 rifles were delivered in June 1944, as the M1C and M1D →Garand rifles were being developed as replacements. Total military Springfield '03' production has been estimated at 1.97 million.

¶ The history of the Springfield rifle has been covered in detail by Colonel William S. Brophy, in *The Springfield 1903 Rifles* (Stackpole Books, 1985), and Clark S. Campbell, *The '03 Era—When Smokeless Revolutionized U.S. Riflery* (Collector Grade Publications, 1994). A useful listing of the individual patterns will be found in John Walter, *Rifles of the World* (Krause Publications, third edition, 2006).

Spring & Western A spring-air revolver marketed by →Healthways, Inc.

Sprinter This was a Spanish 6.35mm calibre pocket pistol, based on the →FN Browning of 1905, made in Eibar by →Garate, Anitua y Compañía; six rounds, striker fired?

Sproxton ["The..."]. Found on shotgun cartridges sold by J.H. →Gill of London.

SPS Found on U.S. military firearms and accessories. See 'Sidney P. →Spaulding'.

Sp. & Sr., in fraktur. Found on rifles and handguns made for the German authorities by →Spangenberg & Sauer of Suhl. They include 1871-pattern →Mauser carbines and →Reichsrevolvers.

S.Q.: an abbreviation of 'Super Quality', used on cartridges made by the →Winchester Repeating Arms Co.

Square Deal A brand name associated with shotguns made by the →Crescent Gun Company.

Squire James Rollin Marble Squire; Boston, Massachusetts, U.S.A. Co agent, with Allison Owen →Swett and Henry Newton →Sheldon, involved in the specification submitted on behalf of Augustus Bedford (British Patent 23/76 of 1876).

Squire James Squire or 'Squires'. A gunmaker first listed in Mile End Old Town in 1847, then at 14 Newcastle Street, London E, in 1860–7; additionally at 72 Kingsland Road in 1868–73; and then at Newcastle Street alone until 1892. The business was then continued until 1895 by John Squires, presumably James Squires' son.

Squires Bingham: details to add.

Squirrel [The]. This brand name was used by the →Chamberlain Cartridge Company of Cleveland, Ohio, on shotgun cartridges.

SR *linear monogram with neither letter dominant*, usually placed on the breast of a

- stylised eagle. Associated with the products of →Sturm, Ruger & Co., Inc.
- SRC** *superimposition-type monogram with 'R' dominant*. A mark used by →Sears, Roebuck & Company, often found moulded into the rubber grips of bought-in revolvers or on shotgun butt plates.
- SRW** *superimposition-type monogram with 'S' dominant*. Correctly 'RWS' (q.v.); used by →Römerwerke AG of Suhl.
- SS**: 'stainless steel', used generically.
- SS** *vertical superimposed-type monogram, with letters of equal dominance*. Found on the grips of semi-automatic pistols made in Germany after the end of the First World War by J.P. →Sauer u. Sohn of Suhl.
- SS** or **S&S**, *often set into three overlapping triangles*. A mark associated with →Simson & Company of Suhl, found on the slides of semi-automatic pistols, on the receivers of bolt-action rifles, and on the butt plates of shotguns.
- S&S** or **S u. S.** Found on the grips of semi-automatic pistols made prior to 1919 by J.P. →Sauer u. Sohn of Suhl.
- SS**, 'Stainless Synthetic'. Applied to a version of the →Remington M700 bolt-action rifle with a stainless-steel barrelled action set in a composite half-stock.
- SSA** or **S.S.A.** Found on →Lee Enfield rifles and rifle parts made by the →Standard Small Arms Company of Birmingham, Warwickshire, England, in 1916–18. SSA was then succeeded by the →National Rifle Factory No. 1 ('N.R.F').
- SSA** *monogram*. A trademark associated with Sanders Small Arms Ltd (q.v.).
- SSC** *superimposition-type monogram with 'S' dominant*. See 'CSS'; used by C.S. →Shatuck.
- SSS** *monogram in triangular form, customarily encircled*, each attenuated sans-serif letter sharing a common base. Used on handguns, shotguns and sporting rifles made in Germany since the late 1960s by J.P. →Sauer & Sohn GmbH of Eckenförde.
- SS** *within U* A mark found on the slides of .45 M1911A1 →Government Model pistols made for the U.S. armed forces by the →Union Switch & Signal Company.
- SSW** *superimposition-type monogram with 'W' placed centrally on two overlapping letters 'S'*, usually within a diamond placed on concentric circles. Found on the grips of →Pieper-type pistols made in the 1920s by →Steyr-Solothurn Waffen AG.
- STA** This mark—*Section Technique d'Artillerie*—distinguished several auto-loaders developed in 1894–1916. Fusil STA No. 4 (later reclassified 'Fusil A1') was a Pralon Meunier design dating from 1897. It was gas operated and locked by rotating interrupted thread type lugs into seats in the receiver. It was also the precursor of a series of improved rifles, No. 5 to No. 7 (Fusils A2, A3 and A5), culminating in the 7mm calibre STA No. 6. This was adopted officially as the 7mm Fusil A6 or →Meunier.
- Stacey** Benjamin J. Stacey, an English gunsmith, was recorded in 1887B94 at 17 & 19 Settles Street, London E., and thereafter as 'Stacey & Co.' until 1900 or later.
- Sta-Clean** A tradename associated with →Sears, Roebuck & Company, a corrupted form of 'Stay Clean', indicating cartridges loaded with non-corrosive priming—

- cf., 'Kleanbore', 'Sinoxid'.
- Stadelmann** Paul Stadelmann; Suhl in Thüringen. A gunmaker working in 1920B45 period, with a manufactory at Schlageterstrasse 61 in 1941.
- Stafford** ['The...'], also known as "The Stafford Deep Shell". A name found on shotgun ammunition sold by →Harrison & Hussey of London.
- Stahl** B. Stahl; Suhl in Thüringen. Listed in German trade directories of the 1890s as a maker of 'weapons and cartridge cases' (Waffen- u. Patronenhülsenfabrik), this business was run by Babette Stahl, the daughter (or, perhaps, widow) of Richard Stahl, until sold in 1901 to G.C. →Dornheim of Suhl.
- Stahl** John Stahl, a government arms inspector, accepted military equipment in the years immediately after the Civil War had ended. They were marked 'JS', but can be difficult to distinguish from others accepted in an earlier era by James →Stillman and John →Symington. See also "U.S. arms inspectors' marks".
- Stahl** Richard Stahl; Suhl in Thüringen, Germany. Two types of rifle designed by this gunmaker may be encountered. The rarer, dating from 1869, embodied a self cocking pivoting block action operated by a bulky two part lever in the enlarged trigger guard ahead of the trigger. The 1873 pattern was operated by a breech block extension lever running down the right side of the stock wrist. By 1880, Richard Stahl had turned to true Martini action rifles at the expense of his own designs. He was succeeded by Babette Stahl (above).
- Stähle** Wilhelm Stähle designed the roller locking system embodied in the Mauser Gerät o6 series, and later in the →CETME rifle.
- Stainless Steel Bodyguard** This swing-cylinder →Smith & Wesson revolver was introduced in 1986 as the Model 649. See 'Airweight' and 'Bodyguard'.
- Stainless Steel Chiefs Special** A swing-cylinder revolver made by →Smith & Wesson. See 'Airweight' and "Chiefs Special".
- Stainless Steel Combat Magnum** Also known as the Model 66, this .357 swing-cylinder revolver was the work of →Smith & Wesson. See 'Combat Magnum'.
- Stainless Steel Combat Masterpiece** A swing-cylinder revolver made by →Smith & Wesson, also known as the Model 67. See 'Combat Masterpiece'.
- Stainless Steel Distinguished Combat Magnum** A swing-cylinder revolver made by →Smith & Wesson, also known as the Model 686. See 'Distinguished Combat Magnum'.
- Stainless Steel Distinguished Service Magnum** A swing-cylinder revolver made by →Smith & Wesson, also known as the Model 681. See 'Distinguished Service Magnum'.
- Stainless Steel Kit Gun** A →Smith & Wesson swing-cylinder revolver, also known as the 'Model 63'. See 'Kit Gun'. 8. Stainless Steel Magnum. The first of these, known as the 'Model 629', was a .44-calibre swing-cylinder →Smith & Wesson introduced c. 1980. A .41 version followed in 1982 (Model 657). See 'Magnum'.
- Stainless Steel Military & Police** A swing-cylinder revolver made by →Smith & Wesson. See 'Military & Police Model'.
- Stainless Steel Service Kit Gun** A revolver made by →Smith & Wesson. See 'Service Kit Gun'.

Stainless Steel Target A blowback semi-automatic pistol made by →Smith & Wesson. See ‘Target Stainless’.

Stainless Steel Target Kit Gun A revolver made by →Smith & Wesson See ‘Target Kit Gun’.

Stalham [‘The...’] or, alternatively, ‘The Stalham Superior’. Marks of this type are associated with shotgun ammunition sold by →Edmonds of Stalham, ?Norfolk, England.

Stamford Champion [‘The...’]. Found on shotgun cartridges sold by →Grimes of Stamford, Lincolnshire, England.

Stanbury & Stevens; Alphington Street, Exeter, Devon. The marks of this gunmaking business have been found on a variety of shotgun cartridges, sold under names such as ‘The Devonia’, ‘The Game’, ‘The Monocle’, ‘The Red Flash’, ‘The →Stanby’ and ‘The Swift’. Most of them seem to have been made by →Eley-Kynoch.

Stanby [‘The...’]. Reportedly found on a 12-bore shotgun cartridge made by →Eley-Kynoch for →Stanbury & Stevens of Exeter, this is believed to have been a contraction of the ‘Stanbury’ name.

Stand: see ‘Buffalo-Stand’.

Standard, usually found as ‘The Standard’. A brand name found on shotgun cartridges handled by Charles →Hellis & Sons of London; by George →Hinton of Taunton prior to 1918; by P.D. →Malloch of Perth and →Rudd of Norwich and Great Yarmouth (made by →Eley-Kynoch); and by the →Hull Cartridge Company in recent years.

Standard A →Suicide Special revolver made in the U.S.A. by the →Meriden Arms Company of Meriden, Connecticut. It dates from the late nineteenth century.

Standard Arms Company; Wilmington, Delaware. Maker of auto loading rifles patented in the U.S.A. prior to 1906 by Morris F. →Smith. Production of the gas-operated Model G was apparently confined to 1910-12, though a manually-operated derivative (Model M) lasted until 1914.

Standard Products Company; Port Clinton, Ohio. Maker of →M1 Carbines for the U.S. government during the Second World War. The contract was granted in August 1942, asking for deliveries of an unprecedented 45,000 guns monthly, and stopped on 30th April 1944 after 247,160 carbines had been delivered. Their receivers were usually marked STD. PRO.

Standard Small Arms Co. Ltd [‘The...’]; 8 Lench Street, Birmingham, Warwickshire, England was formed in November 1914 by Douglas V. →Johnstone, a partner named Peterson and a London financier named Waring, eager to take advantage of a government grant. A contract to make SMLE rifles was agreed with the Ministry of Munitions in January 1915, but such great problems ensued that production—and then only of a few key components—did not begin in earnest until 1917. The rifles were assembled in the →Enfield factory under the →Peddled Rifle Scheme. The Ministry of Munitions, losing patience with bad management and erratic deliveries, bought the Standard Small Arms Company in June 1918 and renamed it →National Rifle Factory No. 1. Rifle components

from this particular source were marked 'SSA' or later 'NRF'.

Standard Smokeless A mark found on 12-bore shotgun cartridges distributed by →Manton & co., 'London & Calcutta', prior to the First World War; manufacturer unknown.

Standard Sporting Guns; Birmingham. Allotted the code 'M 233', this wholesaling business supplier 12-Bore shotguns to the British military authorities in 1942. See also "British military manufacturers' marks".

Standing breech The fixed part of the frame that abuts the base of the cartridge in the firing position, carrying the firing pin or the firing pin bush. The term is usually applied to single shot dropping block rifles.

Stange Engineer Louis Stange, working for →Rheinmetall, has been credited with the design of the German FG. 42 automatic rifle.

Stanley Merrit F. Stanley of Plymouth, Michigan, until 1890/91 (and Northville, Michigan, thereafter) was granted several patents and is best remembered for the →Globe and →Warrior BB guns. Among his patents were U.S. Patent 420,316 of 28th January 1890, protecting the hinged-stock cocking system of the →Globe. U.S. Patent 461,224 of 13th October 1891 protected an airgun with a sliding barrel; 454,081 of 16th June 1891 allowed claims for a modification of the →Globe, assigned to the manufacturer prior to production. U.S. Patent 627,764 of 27th June 1889 and 767,968 of 16th August 1904 both protected spring air guns.

Stanley Arms Company Found on shotguns handled by the H. & D. →Folsom Arms Co., possibly imported from Europe.

Stannard R.N. Stannard, a government arms inspector working in 1905, accepted revolver-components and firearms accessories marked 'RNS'. See also "U.S. arms inspectors' marks".

Stanton John Stanton ['& Son']; Wolverhampton, Staffordshire. Listed as a gun-lock maker from 1855, Stanton traded from Clifton Street, Chapel Ash, until the early 1880s. The trading style then became 'Stanton & Son' and a move to 17 Merriedale Road occurred in 1886/7. Stanton was the recipient of several British Patents protecting the design of →rebounding locks: 367 of 1867, 3774 of 1869, and 928 of 1877. Work seems to have ceased shortly after the end of the First World War.

Stapp Richard Stapp. This British metalsmith was originally listed as a gun barrel maker in Wheeler Street, Spitalfields, London, in 1816. By the census of 1841, however, he had become a gunmaker in St John Street, Clerkenwell. Later directory entries have him at 2 Goldsmith's Place, Hackney Road (1846–8), then finally at 16 Road Side, Mile End, from 1852 until 1858. It is assumed he then died or retired.

Star, usually as 'The Star', associated with shotgun cartridges sold by →Rudd of Norwich and Great Yarmouth, possibly acquired from Charles S. Rosson (q.v.), and also with .410-calibre examples (often marked "The Star 410") sold in East Anglia by Charles S. →Rosson of Norwich.

Star An under lever cocking air pistol made by E. →Anson & Company of

Birmingham, England, from 1922 until c. 1929.

Star A →Suicide Special revolver made by the →Prescott Pistol Company of Hatfield, Connecticut, U.S.A., in the late nineteenth century.

Star and Cross. A brand name and trademark associated with Joseph →Rodgers.

Star–Bonifacio Echeverria SA Known for much of the inter-war period as 'Fábrica de Armas "Star"—Continuadora de B. Echeverria', the business was renamed 'Star–Bonifacio Echeverria SA' in 1939 and continues to trade.

Starfire, or 'Star Modelo DK'. A small semi-automatic pistol made by Star–Bonifacio Echeverria SA, from 1957 to the present day. It chambers the 9mm Short (.380 ACP) cartridge and can be obtained in a variety of finishes. See also 'Starlet'.

Starlet, or 'Star Modelo CU'. A replacement for the Star Modelo CU pocket pistol, this small blowback semi-automatic pattern appeared in 1957. Chambered for the .25 ACP cartridge, it has been offered with a blue or chrome-plated steel slide, and aluminium-alloy frames anodised black, blue, gold, green or grey. See also 'Starfire'.

Starlight, 'Starlite' or 'Star Modelo BKS'. A compact Colt-Browning type semi-automatic pistol made by →Star–Bonifacio Echeverria SA in 1970–81. It was chambered for the 9mm Parabellum cartridge and had a 4.25in barrel.

Star handguns The earliest guns associated with this name were 6.35mm Mannlicher-style Modelo 1908 and Modelo 1914 blowbacks made in Eibar by the →Echeverria brothers (until 1910) and then by Bonifacio Echeverria alone. The Modelo Militar 1, or 'Model 1 Military', was an enlarged version of the pocket pistols, chambered for the 7.65mm cartridge. The last guns of this type were not sold until 1929, though they had probably been in stock for some years. Commercial examples sometimes chambered the 6.35mm or 9mm Short rounds instead of the much more popular 7.65mm type.

¶ When the war had finished, the Echeverria management decided that the locked-breech →Colt-Browning pistol had more to commend it than an experimental locked-breech adaptation of the Military Model 1 that had been offered to the French. The Modelo Militar 1920 embodied a conventional Browning dropping-link barrel depressor, though some of its constructional details—especially the radial safety drum mounted in the slide—mirrored the Echeverria-modified Mannlichers.

¶ The failure of the M1920 to interest the army, being taken only in small numbers by the Guardia Civil, led to the Modelo 1921. This embodied a grip-safety mechanism, but was rapidly superseded by the perfected Modelo 1922 with a plain back strap. The 9mm Largo M1922 was adopted by the Guardia Civil on 5th October 1922, many examples being found with an enrayed coronet mark on the left side of the slide. It is essentially a 1911-type Colt-Browning, with a coil-type main spring, changes in the trigger, and the omission of a grip-safety lever.

¶ Known commercially as the Modelo A, chambered for the 7.63mm Mauser, 9mm Largo, .38 ACP or .45 ACP cartridges, the M1922 formed the basis for a

range of locked-breech Star pistols. The Modelo AD was a selective-fire variant of the Modelo A, with a selector on the right side of the slide; this was protected by a Spanish patent granted to Bonifacio Echeverria in February 1930 (no. 116773).

¶ The 'A'-type guns were replaced in 1931 by the more robust 'M' patterns: semi-automatic Modelo M, selective-fire Modelo MD, and a rarely-encountered variant MD incorporating a rate-reducer patented in Spain in February 1934 (no. 133526). Rate-reducing pistols would have been adopted in Siam as the 80th Year Type, but, though machinery had been delivered from Greenwood & Batley of Leeds, the advent of the Second World War prevented series production. 'Military Model' MD pistols usually have tangent-leaf back sights and combination shoulder stock/holsters.

¶ The Super Star series appeared after the end of the Second World War. This consisted of adaptations of the 'A', 'B', 'M' and 'P' pistols with a loaded-chamber indicator, a magazine safety system and easier dismantling. Introduced in 1941, the Star Modelo S was a small version of the Modelo A, lacking the grip safety; it was chambered for the 7.65mm Auto cartridge. The contemporaneous Modelo SI was similar, but adapted for the 9mm Short round. Both patterns were discontinued in 1965. The Super S and Super SI (1946–72) had loaded-chamber indicators and magazine-safety systems. They were replaced by the Star Super SM, discontinued in 1982, which had an adjustable back sight.

¶ Other guns included the Star Modelo CO 'Pocket', made from 1941 until 1957, and its replacement, the CU →Starlet. The Modelo DK and HK, known as the →Starfire and the →Lancer respectively, were essentially similar to the Starlet.

¶ A range of .22-calibre pistols has been offered in the 'F' series: the Star Modelo F had a 10cm barrel and fixed sights; the Modelo FS had a 15cm barrel and adjustable sights; and the Modelo F Olimpico, supplied only in .22 Short, had a 18.5cm barrel with adjustable counterweights. All three patterns were introduced in 1942 and discontinued in 1967, when the modernised Star Modelo FR appeared. This was made only for a few years, though the Modelo FM—with a heavy frame and a trigger-guard web—and Modelo FRS, with a 15cm barrel, both lasted into the 1990s.

¶ The Modelo BKS or →Starlight was a compact 9mm Parabellum derivative of the standard Colt-Browning guns; Modelo BM and Modelo BKM were similar, but with a steel and aluminium-alloy frames respectively; and the Modelo PD (1975 to date) was a short-barrelled .45 ACP variant with adjustable sights.

¶ The traditional Star pistols were supplemented a range of pistols based on the tipping-barrel →Colt-Brownings, but with their lockwork mounted on a readily detachable sub-assembly. The slide of the 9mm Parabellum Modelo 28 DA (1983–4) ran on rails inside the frame, a radial safety lever lay high on the slide, and a fifteen-round staggered-column magazine was used. The barrel was 110mm long. The retraction grooves were badly placed, being extended forward on the the compact Model 28 PDA, introduced in 1984, which had a 98mm barrel; the Model 28 PKDA was similar, but had an aluminium-alloy frame.

¶ The perfected Modelo 30 (1985 to date) is a 9mm double-action gun. The 30M has a steel frame, whereas the 30PK has an alloy component. Introduced in 1990 in 9mm Parabellum and .40 S&W, the Star Modelo 31 is a compact short-battered version with ambidexterous controls. 'PK' versions of the Models 30 and 31 were offered with aluminium-alloy frames, but had apparently been discontinued by 1991. Other derivations of the new double-action guns include the M40, M43 and M45 →Firestar (introduced in 1990–2), and the →Megastar of 1992.

Staron; Saint Étienne, France. Listed in 1933 as a gunmaker.

Starr Ebenezer Townsend Starr; Yonkers, New York State, U.S.A. Starr was a prolific designer, among his firearms patents being U.S. no. 14,118 of 15th January 1856 for a 'revolving firearm'. He received additional protection in December 1860, when U.S. Patent 30,843 was granted to protect an improved trigger system; a bar type safety mechanism followed on 20th December 1864 in U.S. Patent 45,532. The distinctive cap lock revolvers was built in some numbers prior to 1864 by the →Starr Arms Company. The Starr breech loading carbine, patented in September 1858 (21,523), was tested favourably at Washington Arsenal in January 1858. Somewhat like the →Sharps externally, it was made in large numbers during the American Civil War.

Starr Arms Company; Binghamton and Yonkers, New York State. This U.S. gunmaking business (active 1858–67) made large quantities of cap lock revolvers in accordance with U.S. patents granted to Ebenezer →Starr in 1856. These were .36 or .44 calibre self cockers embodying an early →double action trigger mechanism with an additional 'hesitation element' possibly inspired by the two trigger →Tranter or →North & Savage designs. The first Starr revolvers to see military service were acquired by the U.S. Navy in 1858, but a single action .44 version was introduced in 1864 to facilitate production. The single action trigger system was based on patents granted to Starr in December 1860 (U.S. no. 30843) and Thomas Gibson in April 1864 (42435), and a few even had a bar type safety on the side of the hammer patented by Starr at the end of December 1864 (45532). Much of the production work was sub contracted to the →Savage Revolving Fire Arms Company; by the middle of 1866, nearly 48,000 Starr cap locks had been purchased by the Federal government. The .54 calibre Starr carbine resembled the Sharps carbine externally, but was rather more angular and had a longer receiver. Its two piece radial breech block was locked by a wedge as the actuating lever was closed. A conventional side hammer cap lock provided satisfactory ignition. Three thousand guns were ordered in February 1865, chambered for the .56–52 Spencer rimfire cartridge. A new breech block, fitted with an ejector, and a modified hammer with a short straight shank. Newly made rimfire guns had iron furniture instead of brass. Federal purchases amounted to 25,603 Starr carbines prior to the end of June 1866.

State Arms Company A brand name associated with shotguns made by the →Crescent Gun Company.

State Industry Factory; Shanghai, People's Republic of China. This unit, part of the

- nationalised Chinese engineering industry, makes airguns under a number of different names and model designations, the first of which appeared in Britain in 1973. The guns appear to be the Models 45 3 (→Lion), 55 (→Super Hunter), 61 (→Hunter), 62 (→Pioneer) and →Arrow, plus a pistol designated 'Model 1'.
- State Industry and Munitions Factory;** Port Said, Egypt. Believed to have been the maker of the →Ramses 4.5mm air rifle, in addition to cartridge rifles and a submachine gun.
- Statham** Albert Edward Statham, an employee of →Webley & Scott (in whose name his patents were also filed), was responsible for some of the features of the Mk 2 rifle, otherwise known as the →Service or New Service. The three patents were: 371548 of 1932 for the method by which the barrel is cammed back into its seat to prevent air leak; 388547 of 1933 for the secondary sear, preventing premature release of the piston; and 388548 of 1933 for the quick-detachable barrel.
- Statikal.** This fixed-barrel recoilless 5.6mm rifle was made by →El Gamo and distributed in Britain by →ASI.
- STB** Found on U.S. military firearms and accessories. See 'Samuel T. →Bugbee'.
- Stebbins** John C. Stebbins, a U.S. government arms inspector, accepted →cap-lock firearms made by Henry →Deringer, Henry →North and Asa →Waters in the 1830s. They were marked 'JCS', and can be distinguished from the guns marked by John C. →Symmes by type. See also "U.S. arms inspectors' marks".
- Stechkin** Igor Yakovlevich Stechkin, son of a doctor, was born near Tula in 1922 and graduated from the Tula Mechanical Institute shortly after the end of the Second World War. He designed the 9mm →APS, a selective-fire 9×18 pistol used in small numbers in the 1950s. However, the gun was much too light to function effectively in automatic fire, even when attached to its holster-stock, and was made only in comparatively small numbers. The 'APB' was a silenced version credited to Vladimir →Simonov.
- Steel City Arms, Inc.;** Pittsburgh, Pennsylvania, U.S.A. Makers of the .22 →Double Deuce and .25 →Two Bit Special pistols.
- Steeltown** Found on shotgun cartridges sold by Charles →Maleham of Sheffield and London, 'Steeltown' being Sheffield's nickname. They were made prior to the First World War by →Eley Bros.
- Steiger** W. von Steiger (Thun, Switzerland): see 'Vetterli'.
- Steigleder** Ernst Steigleder of Suhl in Thüringen, Germany, was listed in the *Deutsches Reichs-Adressbücher* of 1914 and 1920 as a 'gunmaker', and in 1930 as a maker of 'weapons and ammunition'. He was best known in the Suhl district as a wholesaler. Premises were maintained elsewhere (Berlin?), as the 1930 Suhl directory entry is qualified as '(Zwgn.)' for *Zweigniederlassung* or 'branch office'. The business has been accorded some modern glory—perhaps misleadingly—by W.H.B. Smith, in *Gas, Air & Spring Guns of the World* (1958), who claimed that Steigleder was one of Germany's major airgun distributors. It is possible that Steigleder's wares were distinguished by the unattributed brand name →Precision, but nothing else is proven.
- Steigleder** Franz Steigleder; Suhl in Thüringen. Operating, according to the

Deutsches Reichs-Adressbuch of 1939, as a gunsmith.

Stein William Stein; Camden, New Jersey, U.S.A. This gunmaker was trading from 215 Market Street from 1860 until 1869, and thereafter at 309 Federal Street. In 1874 the company became 'William Stein & Son', then 'William Stein Jr & Bros.'—well known locally as a sporting goods store—and was still trading under the management of Hermann Engel in the early 1960s as the 'William Stein Company' (a style adopted in 1914/15).

Stein & Hunter; Cape Town, Cape Province. See →Guedes.

Steinbok A brand name found on shotgun cartridges most probably made by →Pulverfabrik Hasloch prior to the First World War.

Steinecke E. Th. Steinecke; Suhl in Thüringen, Germany. Listed in 1900 as a gunmaker (*Büchsenmacherei*).

Steiner A name of unknown significance found on a spring-air gallery pistol made by →Wirsing & Schemann of Cincinatti, Ohio, U.S.A.

Stella A series of airguns, mainly barrel-cocking rifles, made by L. →Kotek AS of Prague c. 1933–43. Also associated with →Kovo AS.

Stenda A 7.65mm →Beholla-type semi-automatic pistol, made in Suhl in the early 1920s by Stenda-Werke GmbH.

Stenda-Werke GmbH; Abteilung Waffen, Suhl in Thüringen and Gemünden am Main, Germany. This gunmaking business appears to have been formed immediately after the end of the First World War, possibly in 1919, and was listed in the *Deutsches Reichs-Adressbuch* for 1920. An advertisement dating from 1925 notes that Stenda made 'hunting and best quality guns, specialising in the Stenda self loading pistol', but trading seems to have ceased in the late 1920s. Stenda-Werke may have acquired the business of →Becker & Hollander after the First World War had ended, inheriting sufficient components to enable assembly of handguns to continue for several years.

Stendebach Fr. Stendebach; Suhl in Thüringen, Germany. A gunmaker operating in Suhl in 1914.

Stendebach Karl F.P. Stendebach of Leipzig-Gohls, Germany, received U.S. Patent 804,349 of 14th November 1905 to protect a 'firearm with drop-down barrel'.

Sten Gun Designed by Reginald V. Shepherd and Harold Turpin of the Royal Small Arms Factory, Enfield, this →blowback 9×19 →submachine-gun was designed to be made by inexperienced sub contractors. Approved in 1940, the Machine Carbine, Sten, 9mm Mark I was made by the Singer Manufacturing Co. Ltd from 1941 onward. The Mark I had a folding hand grip, a wooden butt insert, and a flash hider/compensator on the muzzle. The simplified Mark I* had a skeletal butt, and lacked the fore end and flash-hider assembly. Singer made over 300,000 Mk I and I* guns.

¶ The Sten Mark II had a simple tube-butt and a short cylindrical barrel casing. The magazine housing could be rotated to seal the feed aperture when required, but variations in fitting and construction depended on the origins of the parts. Guns were assembled by →BSA Guns Ltd (404,383 in Tyseley from September 1941), by the Royal Ordnance Factories in Fazakerley and Theale, and in Canada.

¶ The Mark III was made exclusively by Lines Bros Ltd from 1942 onward, production eventually totalling about 880,000. Its one piece receiver/barrel jacket, made from sheet steel tube, had a prominent weld seam along the top of the gun. The Mark 4A Sten was an experimental short barrel paratroop weapon with a pressed steel shoulder piece pivoted on the underside of the pistol grip; the Mark 4B was similar, but its pistol grip/butt arrangements differed. The Mark 5 was an improved Mk II, made in Fazakerley and Theale, with a wooden butt and pistol grip.

¶ Made for commandos and Special Forces, the Sten Mark IIS (Theale and Fazakerley, 1944) had a shortened barrel and a silencer threaded onto the receiver. The Mark 6 (Enfield and Theale, 1944–6) was a silenced Mk 5, distinguished from the Mk IIS by its wood butt. Production amounted to 4,184,237 Stens by March 1945, more than half the guns emanating from the Royal Ordnance Factory in Fazakerley, where 2.35 million assorted Mk II, IIS and 5 had been produced in 1941–5.* Small Arms Ltd of Long Branch, Ontario, made 128,238 Mk II Stens for the Canadian armed forces.

Stensby Robert Stensby; Manchester, Lancashire. This gunsmith traded from 11 Hanging Ditch in 1837, but died in c. 1853. The business was listed until 1869 as ‘Mrs M. Stensby & Son’ and it is assumed that the ‘son’—possibly named Thomas—eventually traded independently. See next entry.

Stensby T. Stensby & Company; Manchester, Lancashire. Possibly the successor to Robert Stensby (above), by way of his widow, this gunmaking business traded for many years from Withy Grove, Manchester. Among its products were shotgun cartridges sold under tradenames including ‘The →All British’.

Stepanov Leonid Victorovich Stepanov was born in 1932 in Buynaksk, Daghestan, and was besieged in Tula during the early stages of the Second World War. Eventually finishing his schooling in 1950, he qualified as a mechanical engineer and was assigned to a design bureau where, in 1955, he participated in the adaptation of the Samozhenkov mount first for the Nikitin and then for the Kalashnikov light machine-guns. Stepanov was co-designer with Konstantin →Baryshev of the tripod mount for the 12.7mm →NSV machine-gun, and, by himself, of perfected 4.5kg tripod mount for the →Kalashnikov PKS machine-gun, which superseded the Samozhenkov type from 1969 onward. A special bracket on the tripod allowed a cartridge-belt box to be attached.

Stephanoise [Société d’Armes]: see ‘Société Stephanoise d’Armes’.

Stephens, see also ‘Stevens’.

Stephens, Smith & Co. Agents for the Swedish →AGA sub-calibre trainer, six being acquired by the British authorities for experiments in 1939.

Sterling A →Suicide Special revolver made by →E.L. Dickinson of Springfield, Massachusetts, U.S.A., in the late nineteenth century.

Sterling A brand name associated with shotguns made in the U.S.A. by the →Crescent Gun Company.

Sterling A single shot break-action BB gun made by the American Tool Works, 1891–1911. Designer unknown. See also ‘Sterling Special’.

Sterling A single shot lever action BB gun, designed by Arthur →Karcher and made by the →American Tool Works in 1911B12. See also 'Sterling Lever Action'.

Sterling Armament & Co. Ltd; Dagenham, Essex, England. Maker of 7.62mm conversion units for the L8 series Lee Enfield rifles, marked with the codeletters 'U.S.'. However, the →Enfield factory brought pressure to bear on Sterling over patent rights and the prospects of export success—e.g., in India—were greatly handicapped. →ArmaLite AR 18 rifles were produced in 1976–8, but Sterling is best known for its submachine guns. The HR81 and HR83 air rifles were made briefly in the 1980s, but operations then ceased and the assets were sold to a Canadian consortium. In addition to guns, Sterling apparently marketed shotgun ammunition under its own name. This was apparently loaded elsewhere in Britain, though its origins are not clear.

Sterling Arms Corporation; Lockport, New York State. Sterling made a variety of autoloading pistols, including the .25 calibre Model 300 and the .22 Model 302.

Sterling Automatic Rifle This was developed by Frank Waters for the →Sterling Engineering Co. Ltd of Dagenham, but was little more than a modified →ArmaLite AR 18. It was subsequently refined by →Chartered Industries of Singapore to become the SAR 80 and SR 88.

Sterling Engineering Company, Dagenham, Essex, England. This engineering business made about 59,000 →Lanchester submachine-guns during the Second World War, and then progressed to the →Patchett design (which ultimately became known as the 'Sterling'). A few →De Lisle carbines were also made, beginning in 1944. The Dagenham plant was allotted the code 'S 109', though, according to British official records, the 'Sterling Armaments Co., Northampton' used 'M 619'. See also "British military manufacturers' marks".

Sterling Lever Action Repeater A 500- or thousand-shot version of the 1911 pattern →Sterling lever action BB gun, made by the →Upton Machine Co. and →All Metal Products Co. in 1917–29. The guns are usually marked 'American Tool Works, St Joseph'.

Sterling Special The break open →Sterling BB Gun made by the →Upton Machine Co. in 1917–27, and then by →All Metal Products in 1927–9. The guns are marked 'American Tool Works, St Joseph'.

Sterling submachine-gun Designed by George V. Patchett, twenty guns of this type were made by the →Sterling Engineering Co. Ltd in January 1944 and others were used during the D-Day landings in June. The Patchett defeated rivals designs in post-war testing, and, after troop trials held in 1949, was approved in 1951 as the 'Submachine gun, 9mm L2A1'. Ribs on the bolt minimised the accumulation of fouling. The L2A2 version followed in 1953; the folding butt was strengthened, the back sight was improved and a plunger was added to the bolt. The perfected L2A3 (1954) had a simpler butt, and lacked the back sight change lever. A Sterling with a large-diameter integral silencer is currently issued for special service as the L34A1, replacing the Stens IIS and Mk 6. More information about these guns can be obtained from *The Guns of Dagenham* by Peter Laidler and David Howroyd (Collector Grade Publications, 1995).

Stern A trademark found on 6.35mm-calibre blowback pistols made in Germany in the early 1920s by Albin →Wahl of Zella-Mehlis. Most of them had ten-round magazines, housed in an extended grip; however, though marked WAHL'S D.R.G.M. on the left side of the slide, they are unremarkable mechanically.

Stern This mark, which appears in Gustav Genschow catalogues, is believed to identify spring air guns made by Friedrich →Langenhan in the mid 1920s.

Sternenkreuz: see Joseph →Rodgers.

Stevens Joshua Stevens; Chicopee Falls, Massachusetts, U.S.A. Born in 1814, this gunmaker is best known for his inexpensive single shot pistols and target rifles. Though these guns were made in great numbers, Stevens was not a great patentee. Beginning with a 'locking device for firearms', U.S. Patent 7802 of 26th November 1850, he obtained 8412 of 7th October 1851 for a 'revolving firearm' (assigned to the →Massachusetts Arms Co.); 9929 of 9th August 1853, protecting a trigger mechanism which relied on thumb cocking the hammer to operate the →Maynard primer and a pull on the trigger lever to rotate the cylinder; and 12189 of 2nd January 1855 for 'magazine firearms' (also assigned to the Massachusetts Arms Co.) for an improved mechanism which rotated the cylinder before the hammer was cocked. U.S. Patent 44123 of 6th September 1864, protecting a single shot pistol with a barrel which tipped upward at the breech. A combination rifle shotgun, protected by U.S. Patent 211642 of 28th January 1879, relied on a 'locking trigger' in an auxiliary guard to lock a sliding under bolt mechanism.

Stevens J. Stevens Arms & Tool Company; Chicopee Falls, Massachusetts. Stevens began trading on his account in 1864, making single shot cartridge pistols. He soon turned his attention to rifles, and made 12-, 14- and 16 bore-shotguns on the basis of his →Pocket Rifle (though the barrels could be as long as 32in). A 10- or 12-bore Stevens patent double barrel hammer gun was introduced in 1877, to be followed about 1880 by a rifle shotgun made in accordance with Stevens' patent of January 1879. The Stevens Arms & Tool Co. was incorporated in 1886, and was eventually absorbed by the →Savage Arms Co. A list of its many products will be found in John Walter, *Rifles of the World* (Krause Publications, third edition, 2006).

Stevens Edgar M. Stevens; Medford, Massachusetts. Co-designer with Francis J. Vittum of a rifle with a laterally sliding breech-block, protected by U.S. Patent 33560 of 22nd October 1861. This was assigned to Alfred B. →Ely.

Stevens Savage: see 'Savage Arms Company'.

Stevenson T.J. Stevenson, an arms inspector working for the U.S. government in the 1870s, accepted →Springfield breechloading-rifle components marked 'TJS'. See also 'T.J. →Smith' and AU.S. arms inspectors' marks".

Steward Gilbert H. Steward, a colonel in the U.S. Army, accepted →Colt and →Smith & Wesson handguns immediately before the U.S.A. entered the First World War in 1917. They were marked 'GHS', date and pattern distinguishing them from guns accepted more than fifty years earlier by Gustavus H. →Scott. See also "U.S. arms inspectors' marks".

Stewart P. Stewart. An English gunmaker listed in 1861–70 at 25 Denmark Street, Soho, London, and then at 16 Denmark Street in 1871.

Steyr See also 'Österreichische Waffenfabriks-Gesellschaft'.

Steyr Found as STEYR within concentric circles, some broken into arcs: a mark associated with →Österreichische Waffenfabriks-Gesellschaft and its successor, →Steyr-Mannlicher GmbH.

Steyr Daimler Puch AG; Steyr, Kärnten, Upper Austria. This combine continued to make →Mannlicher-action sporting rifles and submachine-guns alongside modified 'Model 1934' →Pieper type automatic pistols. Guns may be encountered with the marks of Steyr Solothurn AG, but usually prove to have been made in the Steyr factory.

Steyr-Hahn The Austro-Hungarian Repetierpistole M. 12 derived from the same basic recoil operated rotating-barrel action as the →Roth-Steyr, but had been greatly refined by Steyr technicians as a commercial venture. When the First World War began, the Austro-Hungarians were so short of combat-worthy handguns that the Steyr-Hahn was ordered into series production. By 1918, more than 250,000 pistols had been made. Many survived to serve German police and paramilitary formations during the Second World War, converted to chamber the 9×19 (9mm Parabellum) cartridge. These are usually stamped 'o8' for Pistolenpatrone o8 to identify the change.

Steyr-Mannlicher GmbH The current title of the small-arms and sporting-gun division of Steyr-Daimler-Puch, formed in 1990. Products currently include →Mannlicher-style sporting, target and sniper rifles, submachine-guns, and the →AUG assault-rifle series, but pistols have also been made in small numbers.

Steyr Solothurn AG; Austria/Switzerland. This co-operative venture originated in 1929 when →Rheinmetall absorbed Solothurn, a small Swiss engineering company, so that German-designed weapons could be field-tested. The guns, including machine-guns and small-calibre automatic cannon, were then made by →Steyr-Daimler-Puch and marketed by Steyr-Solothurn AG (apparently from 1933/4 onward). Work ceased in Switzerland when the Second World War began, though Solothurn continued to trade in a revised form.

Sticht J.L. Sticht Jr, a lieutenant serving the U.S. Navy at the beginning of the twentieth century, accepted →Colt and →Smith & Wesson .38 revolvers marked 'JLS'. Pattern and naval marks distinguish them from army stores accepted contemporaneously by J.L. →Strong. See also "U.S. arms inspectors' marks".

Sticknet(t) Curtis R. Sticknet, or 'Sticknett'. This government arms inspector, working in the 1870s, accepted single-shot →Springfield, →Sharps and →Remington rifles, and Remington →rolling-block pistols marked 'CRS'. See also "U.S. arms inspectors' marks".

Stiegle Carl Stiegle; Germany. See 'Heeren'.

Stiga This brand name is associated with the products of 'Stiga' BStig Hjelmqvist AB of Trånas, a maker and distributor of firearms, sporting goods, airgun pellets and accessories. Stiga AB made rifles based on refurbished M1896 military actions in .270 Winchester, .30-06 and 8×57mm. Single trigger systems were

standard, though a double 'set' pattern was optional. The company's marks have also appeared on the 4.5mm and 5.5mm Stiga Dogg airgun pellets.

Stiles Brothers; Warminster, Wiltshire, England. The marks of this gunsmithing and ironmongery business have been reported on shotgun ammunition sold as 'The →Kill Quick'.

Stillman James Stillman, working on behalf of the U.S. government c. 1830–50, accepted guns and equipment marked 'JS'. See also 'John →Stahl', 'John →Symington' and "U.S. arms inspectors' marks".

Stinger. The U.S. Office of Strategic Services (OSS) made limited use during the Second World War of this single shot .22 pen-pistol, which was comparable with the →Enpen excepting that the .22 Short cartridge was integral with the fabric of the weapon. The Stinger was fired by raising a short lever set into the body, which armed the striker. Replacing the lever released the striker and fire the cartridge. The gun, which was only about 32in long and weighed less than half an ounce, was then simply thrown away.

Stingray or 'RSM Stingray'. Associated with a 6.35mm pocket pistol made in Germany by →Reck, probably for one of its North American distributors.

Stirrup pistols A matched pair of these sold at an auction in Toronto in 1935, but there is nothing to suggest that they were unique. Apparently made in France in the 1860s and found in Bordeaux in 1917, one of the two-shot stirrups faced backward, discouraging pursuit, with the other pointed forward to assist an attack. They were fired with lanyards.

St Louis Air Rifle Co., Inc.: see →Benjamin Air Rifle Company.

Stobbe Albert Stobbe; Suhl in Thüringen, Germany. Founded in 1865, and still being listed in 1914 as a gunmaker. By 1930, however, the business was being run by Witwe Emilie & Rudolf Stobbe.

Stock That part of the gun that contains or supports the barrel and action. It comprises the butt, grip and fore end, but may be made in one piece or two. Originally wood, military stocks are now generally synthetic. Wood remains pre eminent among the sporting patterns despite an ever increasing challenge from fibreglass, Kevlar and other synthetics offering durability and warp resistance.

¶ A one piece sporting stock extending to the muzzle is normally called a *Mannlicher* pattern, on no defensible authority; full length stocks have been used almost since the dawn of gunsmithing era. The *Rational* stock, proposed by W.W. →Greener shortly before the First World War, was basically similar to the German *Schweinsruckschaft* described below. The butt had a pistol grip and a high rounded comb which turned down as it approached the wrist. Simultaneously, the cheek support was moved backward towards the heel to reduce the blow to the cheek arising from recoil, the result being essentially a primitive form of the 'Monte Carlo' stock.

¶ Popular in southern Germany and some parts of central Europe, the "Hog's Back" stock or *Schweinsruckschaft* had a distinctive curved comb, dropping at the wrist and the heel. It was often combined with a squared cheek piece angled to direct recoil away from the firer's cheek. The *Tirolerschaft* or Tyrolean stock,

popular in southern Germany, Switzerland and Austria, has an extraordinarily high comb and a deeply dished cheek piece which must be shaped to deflect recoil back and away from the firer's cheek.

Stock Franz Stock & Companie; Berlin. A member of the family controlling, Richard Stock & Co., one of Germany's leading toolmakers, diversified between the wars to make substantial numbers of an inexpensive target pistols.

Stock pistol This was a simple blowback semi-automatic pistol, with a combination of slab-sided slide and a tubular barrel shroud somewhat reminiscent of the Römer pattern. It could be chambered for .22LR rimfire, 6.35mm or 7.65mm centre-fire cartridges. Guns made in the 1930s, numbered above about 10000, had a faired transition from the frame to the barrel shroud, without the step that characterised their predecessors.

Stocker A.J. Stocker & Son; Chulmleigh, Devon. An ironmongery business known to have promoted shotgun cartridges under the tradename "The Chulmleigh".

Stocker C. & E. Stocker; Chulmleigh, Devon. Believed to have succeeded A.J. Stocker & Son in the 1950s, the principals were presumably A.J.'s sons. Details are lacking.

Stocking & Company; Worcester, Massachusetts, U.S.A. Active in 1849–52, this gunmaking business was best known for pepperboxes.

Stockton Howard Stockton, a lieutenant in the U.S. Army, accepted guns and equipment marked 'HS'. His inspection duties were apparently confined to 1868/69, but it can be impossible to distinguish his work from that of H. →Saunders, Horace →Scott, Harris →Smith and Howard →Stockton—all of whom used the same marks. See also "U.S. arms inspectors' marks".

A.F. Stoeger & Company; New York, Long Island City and South Hackensack, New Jersey, U.S.A. This company was founded by Austrian born Adolf Stoeger about 1922, trading from 606 West 49th Street in New York City. A move to 224 East 42nd Street took place in 1924, and then to 509 Fifth Avenue (1928–60); a storehouse in Long Island City finally opened in 1948, but all of Stoeger's operations finally moved in 1962 to purpose built premises in South Hackensack. The firm is best known for its association with the →Parabellum pistol (registering the name 'Luger' in the U.S.A. in 1929) but also imported bolt action sporting rifles built on Oberndorf and FN Mauser actions prior to 1939. Many →Mayer & Gammelspacher →Diana airguns were handled in the 1933–59 period, often under the →Peerless brand name and an assortment of model designations. Stoeger's original trademark consisted of flying geese, though two seated Bald Eagles were used at a later date.

Stoeger Industries; Hackensack, New Jersey, U.S.A. The modern successor to A.F. Stoeger & Co., renowned for the distribution of Daewoo, Husqvarna and other firearms. Stoeger also guards its ownership of the 'Luger' trademark in the U.S.A., and has been sponsoring blowback and recoil-operated 'Stoeger Luger' and 'American Luger' derivatives since the 1970s.

Stogos A trademark associated with →Stotz u. Goessl of Suhl.

Stohanzl Victor Johann Stohanzl; Birmingham, Warwickshire, England. This

Austrian-born employee of →BSA was the co patentee of a piston valve for pneumatic guns—British Patent 571163, accepted on 9th August 1945.

Stokes John Stokes was an American-born co-patentee, with Daniel →Wesson and John →Blaze, of the →Wesson shotgun. See U.S. Patents 72434 of 17th December 1867 and 84314 ('gun lock') of 24th November 1868.

Stoll E. Stoll; Suhl in Thüringen, Germany. Listed in the Deutsches Reichs Adressbuch for 1900, this gunmaking business was owned at that time by E. Lieber.

Stoll Ernst Stoll; Suhl in Thüringen, Döllstrasse 4–6 (1940–1). Listed in directories published in 1914–41 as a maker of gun barrels (*Gewehrtauffabrik*), owned by Max Heinrich Stoll.

Stone Laurence A. Stone, an army lieutenant, accepted .45 M1911A1 pistols made by →Colt shortly before the U.S.A. entered the Second World War. They were marked 'LAS'. See also "U.S. arms inspectors' marks".

Stoner Eugene Morrison 'Gene' Stoner was born in Gasport, Indiana, in November 1922. Graduating from technical high school, he worked for Vega Air Craft (subsequently part of Lockheed) and then served the U.S. Marine Corps during the Second World War. Stoner joined the Fairchild Airplane Company in 1954, intending to develop lightweight infantry weapons that could be marketed by the new Fairchild-inspired →ArmaLite Company, and the chequered development of the AR-3, AR-7, AR-10 and AR-15 has been related many times. Fairchild eventually sold rights to Artillerie-Inrichtingen in the Netherlands, but these were subsequently retrieved by →Colt's Patent Fire Arms Mfg Co. The introduction of the M16 and M16A1 rifles to the U.S. armed forces remains not only controversial, but also the focus of more than one Congressional enquiry. However, Stoner had by then moved on to the Cadillac Gage Company, designing the Stoner 63 weapons system and becoming involved in projects ranging from the Colt Model 2000 pistol to a 25mm aircraft cannon. He died in Palm Beach in April 1997.

Stoner weapons system The adoption of the 5.56×45 'intermediate' cartridge inspired development of systems in which basic components could be assembled to provide a range of weapons from a submachine gun up to a tripod mounted belt fed infantry support weapon. The Stoner M63 and M63A1 attempted to challenge the supremacy of the M16 →ArmaLite rifle in the late 1960s. Made firstly by the Cadillac Gage Company and then licensed to →NWM, a standard pistol-gripped receiver could be assembled to form an assault rifle; a carbine; a light machine gun with top mounted box feed; a similar gun with belt feed; a belt feed infantry support machine gun mounted on a tripod; and even a stripped down vehicle gun. All relied on a simple gas operated rotating bolt lock, and encountered limited success when a few XM22 rifles and XM207 light machine guns were purchased for the U.S. Special Forces. Combat experience showed the Stoners to be delicate and prone to jamming, and, though the faults could have been overcome had funding been available, the weapons-system concept was abandoned.

Stop A single-shot .320 blank/gas-cartridge pistol resembling the mechanical 'propelling' pencils popular in the inter-war period. It is believed to have been made by →Moritz & Gerstenberger of Zella-Mehlis.

Stop A Hungarian pistol. See 'Frommer-Stop'.

Storekeeper's Model. A 'black powder' .45-calibre version of the 'Third Model' →Single Action Army Model, offered by the Firearms Division of →Colt Industries in 1984–5, this had a 4in barrel lacking an ejector-rod case. Only a few hundred were made.

Storer David Storer. Listed in 1852–3 at 10 Craven Buildings, Drury Lane, London, this man was regarded as a member of the English gun trade.

Storm William Mont Storm or 'Mont Storm' (U.S.A.); New York City. The affairs of this inventor-patentee remain mysterious; even his name has been regularly, but possibly mistakenly rendered as 'Montgomery Storm'. Among his U.S. Patents were three for 'brech loading firearms'—15307 of 8th July 1856, 24414 of 14th June 1859 and 132740 of 5th November 1872—and one for 'revolving firearms', U.S. Patent 14420 of 11th March 1856. He also patented a bullet mould (10834 of 25th April 1854), a charging system (10846 of 2nd May 1854), and a combustible cartridge 'of intestines, coated with gutta percha' protected by 33611 of 29th October 1861. The brech loader protected U.S. Patent 15307 was tested by the Ordnance Department prior to the American Civil War. The weapon had sufficient potential for the conversion of two thousand Model 1842 muskets to be authorised in September 1858, though little was ever achieved. The Storm brech block, which swung up and forward over the barrel, was locked by a sliding bolt as the hammer fell. A pattern to guide production of a similar brechloading rifle musket conversion was →sealed in Britain September 1865. The paper cartridge guns were to be made in Birmingham by the →Mont Storm Gun Works Company, but were rapidly overhauled by the metallic cartridge →Snider.

Storm's Brech Loading Arms Depot Formed to promote the brech-loading rifle-musket conversion patented by William Mont →Storm, this occupied premises at 121 Pall Mall, London, in 1864–5.

Störmer Albert Störmer; Suhl in Thüringen, Germany. Listed in 1939 as a gunsmith.

Störmer E.A. Störmer; Herzberg in Harz, Germany. A maker of crank-wound volute spring brech-loading gallery pistols, probably dating from 1840–65, Störmer had made Girandoni system reservoir guns in the 1820s.

Storrs J.W. Storrs. A leading distributor of guns and ammunition in the 1860s and 1870s.

Stosel A compact Spanish-made Browning type semi-automatic pistol made by →Retolaza Hermanos of Eibar: (a) 6.35mm, six rounds, hammer fired, sometimes marked 'No. 1' or 'Model 1912'; (b) 7.65mm 'Model 1912', six rounds, striker fired; and (c) 7.65mm 'Model 1913', seven rounds, hammer fired. It was named after a famous Russian soldier.

Stotz & Goessl; Suhl in Thüringen, Erffastrasse 16. A weapons making partnership active in 1930–9 under the ownership of Leopold Stotz. Listed during the

- Second World War as a gunmaker, using the trademark 'Stogos'.
- Stötzer** Hilmar Stötzer; Zella-Mehlis in Thüringen. A master gunmaker founded in 1905 and active in Germany until the end of the Second World War. Erroneously listed in the 1939 edition of the *Deutsches Reichs-Adressbuch* as 'Stötzner'.
- Straube** Dieter Straube; Ulm am Donau, Germany. An employee of J.G. →Anschütz and patentee of a loading port for an airgun.
- Straube** Johann Straube; Berlin. The patentee of a spring loaded barrel-locking system for airguns, briefly mentioned in *Die Waffenschmiede* in 1887.
- Streak**: see 'Blue Streak' and 'Silver Streak'.
- Streels** J. Streels; Liège, Belgium. This gunmaker was famed for highly decorative single-shot cap-lock pistols, including one, engraved in gothic style, exhibited at the Great Exhibition of All Nations held in London in 1851.
- Street** W.W. Street, working on behalf of the U.S. government, accepted gun-parts and equipment marked 'WWS'. His activities seem to have been confined to the mid 1870s. See also "U.S. arms inspectors' marks".
- Streitberger** Karl Streitberger; Rudolfstadt. A supplier of sporting guns and ammunition active in the Thüringen district of Germany in 1940–5.
- Strempel** Edgar Strempel; Suhl in Thüringen, Germany. Trading in Suhl in 1930 as a gunmaker, and in 1939 as a gunsmith.
- Strempel** Franz Strempel; Suhl in Thüringen. A gunmaker trading in Germany prior to 1930, often using the trademark 'Stresu' on sporting guns and accessories.
- Stresu**. A trademark associated with Franz →Strempel of Suhl.
- Strickland** E.R. Strickland & Son; Gillingham, Dorsetshire (?). The marks of this gunmaking, or possibly ironmongering business have been found on sporting guns and shotgun ammunition solds "The →Gillingham Cartridge" or "The →Quick Fire".
- Striker** A →Suicide Special revolver made by the →Hopkins & Allen Arms Company of Norwich, Connecticut, U.S.A., in the late nineteenth century.
- Striker** Also known as the firing pin, this is driven by a spring to acquire sufficient energy to fire the cartridge primer. There is confusion over the terms 'striker' and 'firing pin', which are exchangeable. The term inertia firing pin is strictly applied only to a floating pin that is struck forward by the hammer to reach the primer of a chambered round and then driven or cammed back to allow the breech to open; however, the term is now generally extended to include the spring opposed or rebounding pattern. The rebounding (or 'flying') firing pin is shorter than the distance between the hammer and the primer of a chambered cartridge, being struck forward when required and then pushed back into the breech block or bolt by a small coil spring.
- Stringer** William Stringer. This English gunmaker was first recorded in London in Queen's Head Court, Giltspur Street, in 1826, but had moved several times by the time he reached 104 White Lion Street, Pentonville, a decade later. The directories of 1849–63 record him at 86 High Street, Camden Town.
- Strong** Daniel P. Strong. This Federal government arms inspector, working during the Civil War, accepted military equipment marked 'DPS'. See also "U.S. arms

inspectors' marks".

Strong Frederick S. Strong. A Federal arms inspector, working during the American Civil War, Strong accepted firearms marked 'FSS'. See also "U.S. arms inspectors' marks".

Strong J. Strong & Son; Castle Street and Warwick Road, Carlisle, Cumberland. The marks of this dealership have been recorded on shotgun cartridges bearing a distinctive illustration of six feeding pheasants feeding in a woodland. The cases and caps were made by →Eley-Kynoch, though the cartridges may have been loaded in the Carlisle premises.

Strong J.L. Strong, a government arms inspector operating at the beginning of the twentieth century, accepted firearms and military equipment marked 'JLS'. Their army origins distinguish them from navy stores accepted contemporaneously by Lieutenant J.L. →Sticht. See also "U.S. arms inspectors' marks".

Strong Urial P. Strong, a Federal government arms inspector working during the Civil War, accepted military equipment marked 'UPS'. See also "U.S. arms inspectors' marks".

Strong W.E. Strong, a U.S. government arms inspector, accepted .45 M1911 pistols marked 'WES' shortly before the U.S.A. entered the First World War in 1917. See also "U.S. arms inspectors' marks".

Strong Cartridge Company; New Haven, Connecticut, U.S.A. A maker of ammunition identifiable by the inclusion of 'S.C.C.' or 'S.C.Co.' in the headstamps.

Ströver A. Ströver of Nordhausen was a retailer of guns and ammunition active in Germany in 1941.

Stump ["The..."]: see 'Slingsby Guns'.

Sturm Alexander Sturm: see 'Sturm, Ruger & Company'.

Sturm Christian Sturm; Suhl in Thüringen, Germany. Listed in 1900 as a gunmaker. The business had passed by 1914 to Heinrich & Marie Sturm, but was being run in 1920 by Witwe Marie Sturm alone.

Sturm Heinrich Sturm; Benshausen bei Suhl in Thüringen. Listed prior to 1914 as a gunmaker, specialising (unusually in Germany) in the manufacture of revolvers.

Sturm Max Sturm & Söhne; Suhl in Thüringen, Germany. A gunmaking business operated by Max, Leo and Curt Sturm, 1920–39.

Sturm, Ruger & Co., Inc. This gunmaking business was founded in January 1949 by Alexander Sturm and William B. Ruger, in Southport, Connecticut, to exploit a semi-automatic pistol designed by the latter—a one-time U.S. Ordnance officer. The production facilities moved to a new purpose-built factory in Manchester, New Hampshire, in 1969.

¶ The .22-calibre Mark 1 pistol was eventually protected by U.S. Patent 2655839, granted in October 1953 almost seven years after the application had been made. Though a blowback, its name and general outline recalled the German →Luger (no mere coincidence!), and sales were pleasingly brisk. A target-shooting variant was introduced in 1951, and 150,000 pistols of all types had been made by 1957. The Mark 1 was upgraded to Mark 2 in January 1982, with

better magazine and safety arrangements. Blued-steel standard, target and 'Bull Barrel' versions are still being made, alongside guns with stainless-steel metalwork. The Government Target Model (1985) is simply a Mk 2 Bull Barrel Ruger with a barrel of 6.9in.

¶ Ruger also makes locked-breech pistols on the basis of a much-modified Browning tilting-barrel action. The series began in 1987 with the 9mm Parabellum P-85 and has since progressed to the 9mm P89 (1992) and the .40 S&W P94 (1996). Guns have also been made in small numbers chambering the .45 ACP round.

¶ The first cartridge revolvers appeared in the 1950s, beginning a line that has expanded over the years to include the .22 rimfire Bearcat, made in 1958–73 in its original form and then in a 'New Model' until the late 1970s; the Bisley (1980s to date), inspired by the Colt →Peacemaker variant of the same name, is little more than a variant of the Single Six or Blackhawk with a modified grip and a low hammer-spur; the Blackhawk (.30 M1 Carbine, .357 Magnum, 9mm Parabellum, .41 Magnum, .45 Colt, .45 ACP; 1955–73, 1973 to date); the Old Army (introduced in 1977) was a .44-calibre cap-lock; the Police Service Six was a fixed-sight variant of the Security Six in .357 Magnum or .38 Special; the Redhawk, dating from 1980, chambered the .44 Magnum cartridge; the Security Six (1968–87) was a general-purpose police/personal defence revolver, chambered the .357 Magnum round, with adjustable sights; the Speed Six was a short-barrelled Security Six with fixed sights; the Single Six, made in 'old' (1953–73) and 'new' (1973 to date) models, is Ruger's interpretation of the Colt →Peacemaker; and the Super Blackhawk (1960–73, 1973 to date) and Super Redhawk (1987 to date) are essentially long-barrelled Blackhawks or Redhawks chambering the .44 Magnum round. The MR F-1 'Special Police' was a simplified version of the Security Six made in France by →Manurhin.

¶ The original Security Six and its variants were replaced in 1987 by the GP series, the GP-100 introducing a stronger frame, a double-latch cylinder lock, and cushioned grips. The guns have a full-length under-barrel ejector-rod shroud.

¶ The Hawkeye pistol (1963–7), chambered exclusively for the .256 Remington Magnum round, looked like a revolver but was effectively a single-shot design with a laterally tipping block where the cylinder would normally lie.

¶ Ruger has also acquired a fine reputation as a manufacturer of rifles, beginning with the .44 Magnum 44 Carbine (1959–85) and the rimfire 10/22 Carbine (1964 to date). Then came the .223/5.56mm Mini-14 and the 7.62×39 Mini-Thirty (introduced in 1975 and 1987 respectively); the AC-556 was a militarised variant of the Mini-14, and the Ranch Rifle (1982 onward) offered improvements in safety. Folding-stock versions also appeared in the early 1980s.

¶ A fascinating single-shot dropping-block Number One rifle, inspired by the British →Farquharson, appeared in 1966. This particular series has contained a No. 1 Standard Rifle, chambering a variety of cartridges from 220 Swift to .338 Winchester Magnum, and a No. 1 International Rifle with a short barrel and a

full-length Mannlicher-style stock. Special Varminter (.22–250, .220 Swift, .223, 6mm Remington, .25–06) and heavyweight Tropical Rifle versions have also been made, the latter in chamberings as powerful as .458 Winchester Magnum. The Number Three (1972–87) was a simplified version most commonly chambering .22 Hornet, .30–40 Krag or the .45–70–405 Government blackpowder cartridge.

¶ The Model 77 bolt-action rifle, basically a refined 1898-type Mauser, has also been very successful. The Mark 1 was made from 1968 until 1990, being discontinued shortly after the improved Mark 2 had been introduced. A variety of individual patterns have been made, including African (.458 Winchester Magnum), All-Weather Stainless, Express, International (full-stocked, short barrelled), Magnum, Police, Special Top and Varmint models. Two action lengths exist, and a left-hand option is available.

¶ The M77/22 (.22 rimfire) and M77/44 (.44 Magnum), inspired by the Model 77, have also been made in several subvarieties. Introduced in 1984, the M77/22 has a ten-round spool magazine, whereas the M77/44 (1997) has a four-round box. And the M96/44 and M96/22, dating from 1996, are essentially lever-action derivatives of the autoloading M44 and M10/22 auto-loading carbines.

¶ Comparatively little has yet been written about Ruger's products, apart from a detailed study of the original auto-loading carbines. In addition to the many directories common in North America, *Rifles of the World* by John Walter (Krause Publications, third edition, 2006) contains concise listings of Ruger products.

Sturman Benjamin Sturman. This English gunmaker was recorded at 17 Union Street, London, in 1832–4, and then at 42 (perhaps later 45) Kingsland Road, London, in 1835–56. Premises were then listed at 72 Kingsland Road in 1857 only.

Sturman George Sturman. A gunmaker listed at 197 Kingsland Road, London, in 1827. The directories reveal successive moves to 27 Gloucester Street, Hoxton (1830–5); to 29 and then 25 (29 renumbered?) East Road, City Road (1836–48); and then to 1 or possibly 2 West Place, Islington (1849–51). A move to 2 Church Row, Islington, occurred in 1852, and then to 4a Church Row in 1858. The last directory entries were made in 1870.

Sturtevant Foster E. Sturtevant, an engineer employed by →Colt, designed the plunger breech closing system fitted to the →ArmaLite type 5.56mm M16A1 rifle.

St.W. or ST W Marks associated with →Stenda-Werke GmbH of Suhl, found on the grips of the →Stenda pistols.

SU monogram, taking the general form 'S'. Used in the →headstamps of ammunition made by the →United States Cartridge Company.

Sub-calibre adaptor, also known as a 'liner'. This may be inserted permanently into a barrel as a 'liner', generally to alter calibre, or to serve as an 'adaptor' when required—usually to permit training with low cost rimfire ammunition. The adaptor was originally known as an →Aiming Tube in Britain, but then became a →Morris Tube after a particularly notable patentee.

Sudaev Aleksey Ivanovich Sudaev, born in Alatyry in 1912, trained as a machinist, before entering the Railway Technical Institute and then emerging from military service as a 'technician'. Graduating from Gorki Industrial Institute (1938) and then the Feliks Dzerzhinskiy Artillery Academy (1941), Aleksey Sudaev designed a simplified anti-aircraft machine-gun unit which could be made in Moscow even in the darkest days after the German invasion of the Soviet Union. He then produced designs for what became the PPS submachine-gun, made in quantity in Leningrad under Sudaev's direction during the German siege (1941–4). He also contributed two 1945-model rifles—a heavy blowback and a folding butt rotating-bolt design—to 'Avtomat' trials being undertaken towards the end of the war. A few hundred guns were made for troop trials in 1945, but Sudaev's untimely death in 1946 brought development to an end.

Sudden Death ['The...']. A shotgun cartridge made by the →Midland Gun Company in Birmingham, England.

Suhler Waffengesellschaft: see 'Wittwer, Schemmer & Mahrholdt GmbH'.

Suhler Waffenwerk: see 'Gebr. →Merkel'.

Suhler Werke AG: see 'Berlin Suhler Werke'.

Sühn Albert Sühn; Albrechts bei Suhl in Thüringen, Meininger Strasse 11. Listed in 1940–5 as a maker of 'guns, gun parts and metalware'.

Sühn Wilhelm Sühn; Albrechts bei Suhl in Thüringen. A maker of gun parts, active prior to c. 1920.

Suicide Special This popular term was first applied in 1948 by Duncan McConnell, writing in *The American Rifleman*, to define distinctive single-action revolvers distinguished by poor quality and, if not by the identity of the manufacturer, at least a wide variety of brand names. The name achieved broader acceptance after the publication of *Suicide Special Revolvers* by Donald B. Webster, Jr. (1956?). Revolvers of this class began to appear as soon as the Rollin →White patent expired in 1869. A typical 'Suicide Special' was a seven-shot .22 or five shot .32, usually (but not exclusively) chambering rimfire ammunition. The one piece frame usually had a detachable plate on the left side giving access to the simple single action lockwork. Sheath triggers were customary, butts were squared or bird's heads, and the barrels were generally less than three inches long. The cylinders were loaded through a hinged gate on the right side of the frame, but could be removed simply by detaching the axis pin. The guns were blued or nickel plated, and often had poor quality 'engraving' rolled into the surface of the cylinder. Grips were usually wood or gutta percha, though mother of pearl was sometimes used on the gaudier nickelled guns. Guns of this genre were made in very large numbers, particularly in the 1880s. Production is believed to have exceeded a half million annually by 1885, but then went into a steady decline until few were being made by 1900. An incredible profusion of wholesalers', distributors' or spurious manufacturers' marks will be found. Typical of these are 'Aetna Arms Co.' (Harrington & Richardson), 'Chicago Arms Co.', 'Enterprise Gun Works' (Philadelphia), 'Great Western Gun Works' (J.H. Johnson of Pittsburgh), 'Mohawk Mfg. Co.' (Otis Smith), 'New York Pistol Co.',

'United States Arms Co.' and the 'Western Arms Co.' However, successful names were so often simply copied that interpretation is often hotly disputed; there are said to be more than thirty differing revolvers marked 'Defender', made by a dozen agencies.

SUIT An abbreviation used in the British Army for the 4× optical 'Sight, Unit, Infantry, Trilux' issued with the 7.62mm SLR and the 5.56mm SA-80. Now known as →SUSAT.

suk This code-mark is said to have been allocated to the Karlsruhe Durlach (Germany) factory of →Deutsche Waffen und Munitionsfabriken, where it was used on small arms ammunition components made in 1945.

Sullivan J.F. Sullivan, a U.S. government arms inspector working at the beginning of the twentieth century, accepted →Colt revolvers and other military stores marked 'JFS'. See also "U.S. arms inspectors' marks".

Sullivan James L. Sullivan, an engineer employed by the →ArmaLite Division of the Fairchild Engine & Airplane Corporation, was responsible for improvements in the ArmaLite AR 15 rifle (with Robert →Fremont) in 1957–8.

Sullivan Arms Company A brand name associated with shotguns made in the U.S.A. by the →Crescent Gun Company.

Sundance Industries; North Hollywood, California, U.S.A. Manufacturers of the .25 calibre 'A 23' automatic pistol.

Suojeluskuntain Ase- ja Konepaja Osakeyhtiö: see 'Sako'.

Super Found in cartridge headstamps, this signifies that the ammunition had been made by the →Super Cartridge Co. (NB: the mark should not be confused with '.38 Super' chambering.)

Super This →Parker Hale sporting rifle, also known as the '1200 Super' or '1200S', built on a →Santa Barbara Mauser action, was introduced in 1984. Its half stock had a roll over Monte Carlo comb and a rosewood fore end tip. Super Magnum (1200SM) rifles were similar, but chambered 7mm Remington, .300 Winchester or .308 Norma magnum cartridges.

Super Azul: see 'Royal'.

Superbritte A name given to a distinctive over/under shotgun with barrels which pivoted to the left instead of downward, a curved locking lever appearing on the right side of the breech. Patented in Belgium in 1931 by Theophile →Britte, only about 250 actions were made in 1932–3 by Établissements Britte of Vivegnis before the project was overtaken by the Great Depression. The components were supplied to gunmakers in the Liège district, who completed 12-, 16- and 20-bore guns c. 1935–41 in a profusion of styles. The last few were apparently completed after the German occupation of Belgium in 1940.

Super Carbine Another name for the →Benjamin Model 352 pneumatic pump up rifle.

Super Cartridge Co. ['The...']. A short lived Australian manufacturer of ammunition identified by the inclusion of SUPER in their headstamps.

Super-Champion: see 'Buffalo Super-Champion'.

Super Comanche A revolver made in Spain since the early 1980s, based on the

- proven →Comanche action—swing-cylinder construction based on →Smith & Wesson practice. The Super Comanche IV chambers the .44 Magnum cartridge; the Super Comanche V handles .357 Magnum. The barrels have ventilated ribs, frames are blued steel, and the sights are adjustable.
- Super Especial** The 'Modelo Super Especial' was a Spanish break action air rifle made by Armas →Juaristi of Eibar, 4.5mm or 5.5mm calibre, rifled or smooth bore.
- Super Express** Also known as the 'Model 1964', this →Mauser action sporting rifle was made by Franz →Sodia of Ferlach (Austria) in chamberings ranging from 5.6×61mm to 8×68mm.
- Super Grade** Found on a pneumatic pump up rifle made by →Sheridan Products Inc. of Racine, Wisconsin, U.S.A.
- Super Hunter** A break barrel 5.5mm calibre spring air rifle, also known as 'Model 55', made by the →State Industry Factory in Shanghai, People's Republic of China. See also →Hunter.
- Super Match Model** A target-shooting version of the .38 →Super Model, this semi-automatic pistol dated from 1935–41; only a few thousands were ever made by →Colt's Patent Fire Arms Mfg Co., distinguished by their matted-top slides and adjustable sights.
- Super Meteor:** see 'Meteor'.
- Super Model**, or '38 Super Model'. Introduced by →Colt's Patent Fire Arms Mfg Co., made in quantity in 1928–42 and 1946–70, this was little more than a small-calibre version of the .45 →Government Model with a nine-round magazine. About 35,000 guns had been made prior to the Second World War. See also 'Super Match Model'.
- Super Nimrod** ['The...']. A mark found on shotgun ammunition made, or perhaps simply assembled in England by the →Normal Improved Ammunition Company of Hendon, London. See also 'Nimrod'.
- Superposed** This name, sometimes used generically for any →over-and-under shotgun, was specifically associated with the Browning design manufactured by →Fabrique Nationale d'Armes de Guerre and its successor, →FN Herstal SA.
- Super Rapid** or Universal Super Rapid (Czechoslovakia): see 'Universal'.
- Super Rocket**, Super CO₂ Rocket. A carbon dioxide powered pistol made by →Benjamin of St. Louis, Missouri, U.S.A.
- Super Safari** A Mauser-action sporting rifle introduced by →Parker Hale Ltd in two versions, one with a hinged floor plate (Model 1200) and the other (1200C) with a detachable box magazine. Made in chamberings from .243 Winchester to .30-06, 1200 series guns were also offered for 7mm Remington or .308 Norma magnum ammunition (1200M). The 1200 TX was a .308 target rifle, fitted with a PH5 aperture sight and a straight comb butt. Presentation (1200P) and Varmint (1200V) models were made from 1969.
- Supertarget** A special adaption of the →Webley & Scott Mk 3 fixed-barrel underlever-cocking air rifle, 1964–75. It was superseded by the →Osprey Supertarget.

- Super Target** A name associated with M160 gas powered pistol made by the →Benjamin Rifle Company of St Louis, Missouri.
- Super Thirty** Also known as “300 Holland’s Super Thirty”, but more popularly as the ‘300 H&H Magnum’, this sporting rifle cartridge was introduced by →Holland & Holland of London in 1925.
- Super Tornado.** Applied by →Relum Ltd to the Hungarian →Telly LP15 underlever cocking air rifle.
- Super Velocity** [‘The...’]. Encountered on the cases of shotgun ammunition distributed by William →Powell & Son of Birmingham. Most, if not all of the components were acquired from →Eley-Kynoch.
- Supra-Idéal.** Derived from the →Manufacture Française d’Armes et Cycles double-barrelled shotgun, this had the right-hand barrel rifled for ball ammunition. Quadruple-lock actions were preferred.
- Supra-Robust.** A 12- or 16-bore side-by-side double-barrelled →Robust shotgun made by →Manufacture Française d’Armes et Cycles. The right-hand barrel was rifled, and automatic ejectors were often fitted.
- Supra-Simplex.** This was a version of the 12-bore Manufacture Française d’Armes et Cycles →Simplex shotgun with the barrel rifled for ball ammunition. Ejectors were optional.
- Supreme** or ‘FN Supreme’. This was an improved form of the standard Belgian →Fabrique Nationale →Mauser action, with the safety catch on the receiver behind the bolt handle.
- Supreme No. 1.** This .303 Lee action sporting rifle, made by →Parker Hale Ltd, was introduced in 1958. Though retaining the original military pattern action, complete with charger guides, it had a new pistol grip butt with a Monte Carlo comb, and a half length fore end.
- Suredeath** [‘The...’]. A mark associated with shotgun cartridges sold by →Garnett of Dublin, Ireland.
- Surekiller** [‘The...’]. Encountered on shotgun cartridges distributed by →Rowell & Son of Chipping Norton. They are believed to have been made prior to 1914 by →Eley Brothers.
- Sureshot** Usually encountered as ‘Sure-Shot’, this was a Langenhan made →Millita spring air rifle sold by →Ramsbottom & Co. of Manchester, prior to 1905. See also ‘Anglo Sure Shot’.
- Sureshot Smokeless** [‘The...’]. Associated with a shotgun cartridge made in England by →King’s Norton for sale by →Sowman of Olney prior to the First World War. The charge was ‘E.C’ (q.v.) No. 5 propellant.
- Susa** [di Guglielminotti]: see ‘Valle Susa’.
- SUSAT** An abbreviation for the British 4× optical ‘Sight, Unit, Small Arms, Trliux’ issued with the SA-80 rifle. The term replaced →SUIT (q.v.) in the 1980s.
- Sussex Armoury;** Sturton Place, Hailsham, East Sussex, and Shambles Square, Manchester. This British metalworking company began life in the 1960s as a retail outlet for airguns and accessories, in addition to reproduction daggers and similar impedimenta, but then produced a few guns of its own—notably

- the →Jackal series. Airgun pellets were also marked with the Sussex Armoury brand, though they were made elsewhere (e.g., by →Lane Brothers or in Italy).
- Sussex Champion** [“The...”]. Used by Russell →Hillsdon on shotgun ammunition.
- Sussex Express** [“The...”]. Another brand name found on shotgun cartridges loaded by Russell →Hillsdon.
- Sutherland Sight Company**: see ‘Ross Rifle Company’.
- Sutter**. A gun designer, responsible for the →RSC rifles and the →CSRG machine rifle with his colleagues Chauchat and Ribeyrolles.
- Suttie**: see ‘Grant Suttie’.
- SVD**. An abbreviated form of Samozaridniya Vintovka Dragunova—applied to the Soviet/Russian 7.62×54 →Dragunov sniper rifle.
- SVT**. This signified the Samozaridniya Vintovka Tokareva—applied to the 7.62×54 →Tokarev auto-loading rifles of the 1930s. See also ‘AVT’ and ‘SNT’.
- svw** Associated with small-arms components made in Germany in 1945 by →Mauser Werke AG of Oberndorf am Neckar.
- SW** *superimposition-type monogram, with neither letter dominant*. Correctly ‘WS’ (q.v.); associated with →Charlier et Cie of Liège. See also ‘Wegria-Charlier’.
- S&W** *superimposition-type monogram, often encircled, either with both letters equally dominant or slight prominence given to ‘S’*. Associated with the products of →Smith & Wesson.
- S&W** Popularly used to identify a specific chambering—e.g., ‘.32 S&W’—originating with →Smith & Wesson of Springfield, Massachusetts.
- Swallow** Clark Swallow, a Federal government arms inspector working during the Civil War, accepted cap-lock revolvers and other stores marked ‘CS’. See also “U.S. arms inspectors’ marks”.
- Swamp Angel** A brand name associated with a .38 single action →Bull Dog type revolver made by →Forehand & Wadsworth c. 1880.
- Swanson**. A.C. Swanson Company; Sun Valley, California, U.S.A. Manufacturers of the →Schimel or →Carbo Jet gas pistol, initially for the Schimel company and latterly for the American Weapon Corporation.
- Swartz** William Swartz received a U.S. Patent to protect the grip safety and concealed hammer system of the 1915-type →Savage pistol. See *Ten Shots Quick* by Daniel K. Stern.
- SWD, Inc.**; Atlanta, Georgia, U.S.A. Promoters of the →Ingram submachine-guns, c. 1977–81.
- Swebilius**. Carl Gustaf Swebilius was born in Sweden in 1879, leaving for America in 1896. There he started as a barrel driller with the →Marlin Fire Arms Company, but his talents were soon recognised and he embarked on a highly successful career as a designer. This included shotguns, rifles and the adaptation of the →Colt ‘Potato Digger’ machine-gun to serve in the First World War in tanks and aircraft. When the Marlin Firearms Corporation failed in the early 1920s, Swebilius worked first as a consultant to Winchester and then formed the →High Standard Mfg Co. He re-entered the firearms business when High Standard bought the assets of the defunct Hartford Arms Company in 1931.

He subsequently designed the UD-42 submachine-gun for the United Defence Corporation, and died in October 1948. His many patents used by Marlin ranged from U.S. no. 1.083,708, granted on 6th January 1914 for a pump-action rifle, to 1.702,063 of 12th February 1929 for the Model 38 rifle. A complete list is given by Lt.-Col. William S. Brophy in *Marlin Firearms* (Stackpole Books, 1989).

Sweeney Joseph L. Sweeney of New Haven, Connecticut, U.S.A., an employee of Winchester, was a co-patentee of two 'magazine firearms' with William M. →Wetmore.

Swett. Allison Owen Swett; Boston, Massachusetts. Co-agent with James Rollin Marble →Squire and Henry Newton →Sheldon in the application for Augustus Bedford's British Patent 23/76 of 1876.

S.W.F. Used in the headstamps of Italian →Fiocchi made cartridges sold by →Smith & Wesson.

Swift Encountered on foreign-made shotgun cartridges sold by James →Matthews of Ballymena. Origins unknown. See also 'Hawk', 'Kingfisher', 'Wizard'.

Swift Found on shotgun ammunition made by →Eley-Kynoch for →Stanbury & Stevens of Exeter.

Swift A British break-barrel .22 spring and-piston air rifle made by →Kynoch Ltd prior to 1914, in accordance with a patent granted in 1906 to George →Hookham. The most distinctive feature was the sprung locking arms on the side of the breech.

Swift Usually found as 'The Swift' on →Kynoch-made shotgun cartridges handled in Britain by →Linsley Brothers of Leeds prior to the First World War.

Swift Introduced in 1890, this .38 double-action Iver →Johnson revolver was made in exposed- and concealed-hammer patterns.

Swift Rifle Company; London. Patentees of a training-rifle system which relied on a spring-loaded needle in the muzzle of a wooden 'rifle' imprinting on a reduced-scale target. Many thousands of British soldiers were trained on this system during the Second World War.

Swiftsure ['The...']. This mark will be found on shotgun cartridges handled by →Cogswell & Harrison of London, probably prior to 1914.

Swinburn Gunsmith John Field Swinburn of 16 & 17 Russell Street, Birmingham, Warwickshire, was the son of gunsmith Charles Philips Swinburn (died or retired, 1850). John Swinburn continued to make sporting guns and rifles until 1883 or later. He was granted British Patents 1881/53 of 12th August 1853 (jointly with Thomas Turner) for a back sight; 2625/57 of 14th October 1857 (a communication from Thomas Bailey of New Orleans) for a gun-lock mechanism; 2269/58 of 12th October 1858 for a barrel band; and a group protecting a single-shot dropping-block rifle—110/72 and 1895/72 of 1872, 3635/75 of 1875, 3689/76 of 1876, and 2206/77 of 1877. U.S. Patent 134014 of 17th December 1872 also protected a block-action rifle.

¶ These pivoting-block guns, though clearly inspired by the success in Britain of the →Martini-Henry service rifle, were made commercially in some numbers in the 1870s and 1880s. Typical of the colonial orders was one for 300 rifles

placed on 15th July 1875 on behalf of the Crown Agents for Natal. They were hammer fired and had straight-wrist butts attached to tangs so that the trigger mechanism could be accommodated.

¶ Among Swinburn's other British Patents were 2711/80 of 1880, for cocking and firing systems; 4291/80 of 1880, 525/83 and 1145/83 of 1883, 6624/84 of 1884 and 17088/85 of 1885 all protected shotguns and sporting rifles with 'drop-barrel' actions.

Swinfen John Swinfen; Maidstone, Kent. This English gunsmith, engraver and cutler traded successively from 5 Week Street (1831–9), Sandling Road (1846), and 73 Bank Street (1858–70). The business was acquired soon afterward by A. →Sanders, but Swinfen's marks will be found on shotgun ammunition made prior to 1899 by →Eley Brothers.

Swinging yoke cylinder. A form of revolver construction popularised in the 1890s by →Colt and →Smith & Wesson and since perpetuated by vast numbers of gunmakers. The idea appears to date back at least as far as the Belgian →Levaux pattern of the 1870s.

Sword pistols. The pistol component of these combination weapons is easily detected if the direction of fire is towards the blade tip, but less so if the pistol barrel forms the hilt. Many of the latter are designed to fire backward, away from the blade tip; triggers were often hidden. Cap locks were even easier to disguise than the flintlocks, particularly if enclosed locks and bar hammers were fitted. However, with one or two exceptions where the gun was concealed in the hilt and fired backward, combinations of pistols and swords were rarely secretive. Most of those made during the second half of the nineteenth century incorporated revolvers. See also 'Robert →Colvin', 'Walter →Davis', 'R. →Howard', 'Knife pistols', and 'Micheloni'.

SWP Found on U.S. military firearms and accessories. See 'Samuel W. →Porter'.

Sykes Brothers; Ossett, Yorkshire. The marks of this gunsmithing/ironmongery business have been found on shotgun cartridges made by →Eley Brothers prior to the First World War.

Syllaba Tomas Syllaba; Schlau (?) Bohemia, Austria. A maker of a crank wound volute-spring airgun, with a tip-up breech and set triggers. Probably active in the mid nineteenth century.

Sylden Thomas Sylden. A London based gunsmith, Sylden could be found in 1864 at 33 Leicester Square and 10 Panton Street, Haymarket. A move to 44 Bedford Square, London WC, occurred in 1865, where listing continued until 1879–80.

Symington John Symington, a colonel in the Federal Army, working during the American Civil War, accepted →Springfield rifle-muskets marked 'JS'. Care should be taken to distinguish the similar marks of John →Stahl and James →Stillman. See also "U.S. arms inspectors' marks".

Syms John C. Syms, also listed as 'Symes' or 'Symmes'; New York City. A carbine made to the patent of John Symmes, then a captain in the U.S. Army stationed in Watertown Arsenal, Massachusetts (U.S. no. 22094 of November 1858), was approved on 21st April 1856, though only twenty had been made by March 1857.

The rotating breech block had an 'elastic lip' gas seal around the chamber. When the action was opened, a hole through the block gave access to the chamber. 'John Symmes' accepted firearms and accessories in the decade immediately preceding the Civil War. The items were marked 'JCS', though care is needed to distinguish them from similarly-marked guns accepted in an earlier era by John C. →Stebbins. See also "U.S. arms inspectors' marks".

Syms The name 'John Syms' has been reported on a spring-air gallery gun, and associated with the 44 Chatham Street address of Blunt & Syms (sic) and, as the gallery gun probably dates from about 1870, Syms may have continued the original partnership alone. It is assumed that John Syms was the son of one of the original Syms partners, Samuel or William.

Syndicat Anglais: see 'La Société des Anglais'.

Syndicat des Pièces interchangeables ('SPI'); Liege, Belgium. Formed in 1898 by →Neumann frères, →Janssen fils & Cie and →Dumoulin fils & Cie, this co-operative venture sought to make sporting guns on the basis of standardised parts. The basic components were made by →Fabrique Nationale d'Armes de Guerre, but they were finished in a variety of styles by the individual partners.

Syracuse Forging Company, or 'Syracuse Arms Company'; Syracuse, New York State, U.S.A. This business was formed in 1887 to make →Baker patent exposed-hammer double barrelled shotguns. It is said to have traded until the factory was destroyed by fire c. 1902, then succeeded in 1903 by the →Baker Gun & Forging Company. The chronology of this change remains obscure.

Syrett Benjamin Syrett, a U.S. government arms inspector working in the late 1890s, accepted military stores 'marked BS'.

Syrett H. Syrett, operating c. 1905, accepted guns and equipment for the U.S. Army marked 'HS'. Care is necessary to distinguish them from weapons accepted by H. →Saunders, Horace →Scott, Harrison →Shaler, Harris →Smith and Howard →Stockton, all of whom used 'HS' marks. Possibly a misrepresentation of 'W. Syrett', below.

Syrett W. Syrett, an arms inspector working for the U.S. government c. 1905, accepted items marked 'WS'. Possibly a misrepresentation of 'H. Syrett', above. See also "U.S. arms inspectors' marks".

